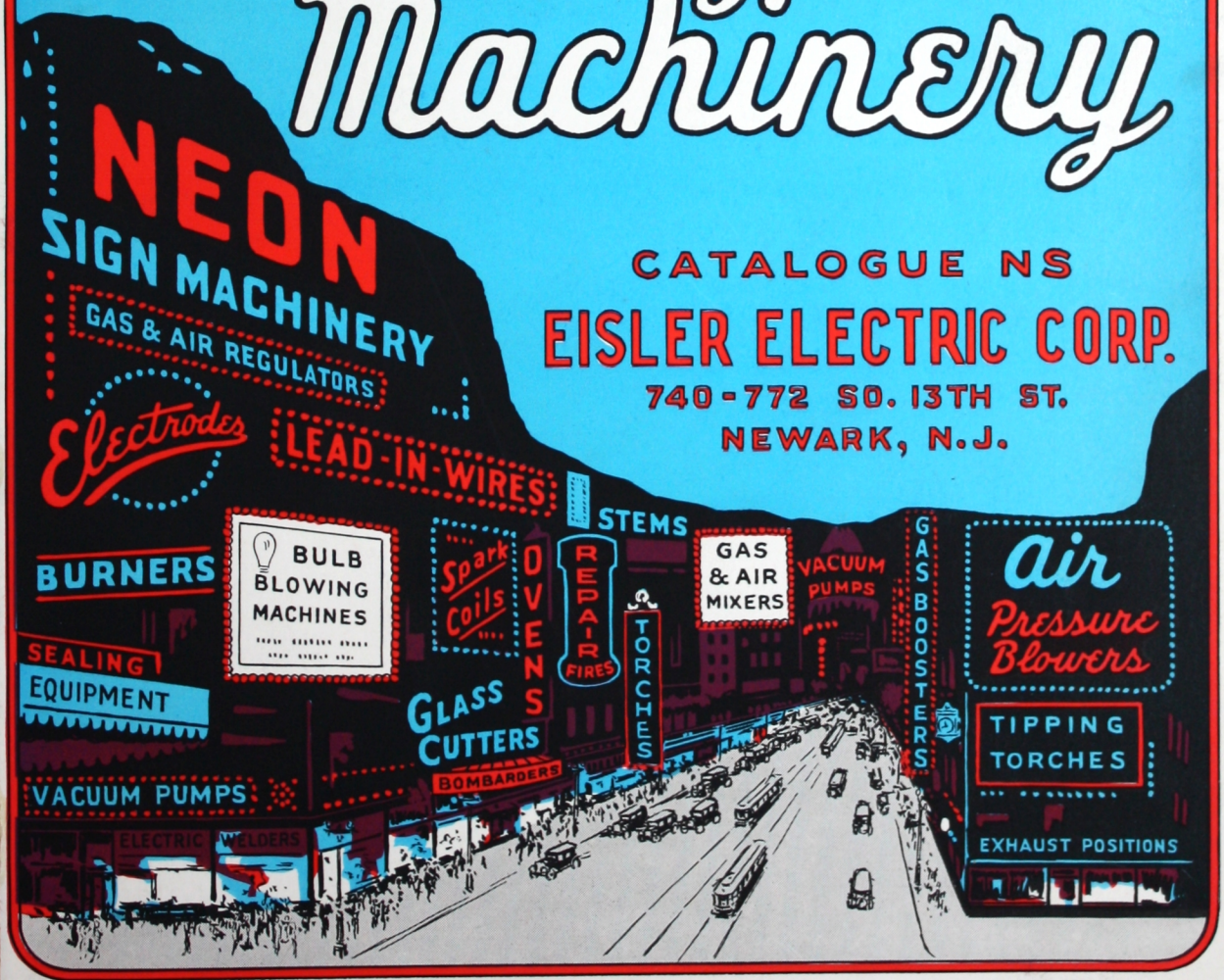
Eisler

Neon Sign Machinery



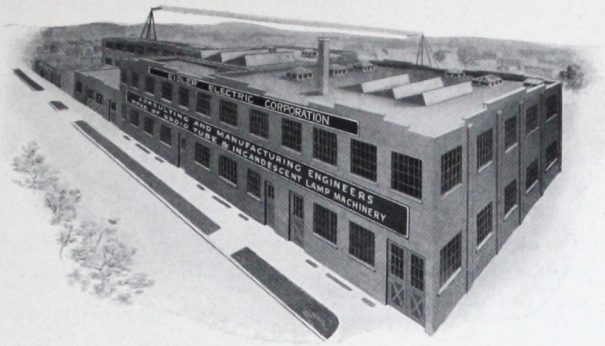
CATALOGUE NS

EISLER ELECTRIC CORP.
740-772 SO. 13TH ST.
NEWARK, N.J.

Quality Built

Many of the unique processes employed in the manufacture of Neon Tubes, Radio Tubes, Incandescent Lamps and its Allied products, are covered by patents owned by the Eisler Electric Corporation.

Printed in U. S. A.



DIRECT WIRE
POSTAL TELEGRAPH
WESTERN UNION

CABLE ADDRESS
EISLER, NEWARK, N. J.
BENTLEYS CODE

EISLER ELECTRIC CORPORATION

Formerly EISLER ENGINEERING COMPANY, INC.

CHARLES EISLER
PRESIDENT

744-772 South 13th Street, near Avon Avenue
NEWARK, N. J., U. S. A.

TELEPHONES
TERRACE
3-5310, 3-5311
3-5312, 3-5313

Manufacturers of Equipment for Producing

NEON TUBES AND ALLIED PRODUCTS

GLASS PRODUCTS

ALSO A COMPLETE LINE OF MACHINES AS LISTED

Air Pressure Blowers
Ampule Exhaust Machines
Electric Furnaces
Electric Welding Machines
Gas Boosters
Gas Purifiers
Gas and Air Burners
Gas and Oxygen Burners
Glass Cutting Machines
Glass Working Machinery
High and Low Frequency Apparatus
High Vacuum Pumps
Mercury Aspirators
Neon Sign Machinery
Transformers
Wire Cutting Machines

Metallurgical Products such as Tungsten Alloys, Molybdenum, Nickle, Copper Clad, etc.

Index and Contents—Page 7

TERMS AND CONDITIONS

PRICES: All prices are net f. o. b. our works, Newark, N. J. No Motors are included in the prices unless specified. Prices submitted on request.

MOTORS: We can furnish Motors of any desired frequency. When ordering, state whether they are to be AC or DC, 110 or 220 volts, 25, 40, 50 or 60 cycles, one, two or three phase.

TRANSFORMERS: When ordering state whether 110 or 220 volts, 25, 40, 50 or 60 cycles. We are also prepared to make special Transformers.

PAYMENTS: In all cases, 1/3 of the total amount with the order, and the balance as per our arrangement.

DELIVERY: Deliveries are made as promptly as possible. We cannot assume any responsibility in case of delay from causes beyond our control.

CLAIMS: Should be made within 10 days of receipt of goods.

GUARANTEE: All machines are guaranteed for one year. Castings or parts found defective within this period, except from the usual wear and tear, will be replaced free of charge.

SHIPMENTS: All machines are fully insured, and shipped at the risk and cost paid by the consignee.

ILLUSTRATIONS: Are not binding as improvements and changes are being made on the machines from time to time. We reserve the right to substitute the latest type of machine without advising purchaser of same.

EXPORT: We box machines for export and deliver to New York Piers alongside of Steamer, charging 2% for this service.

ORDERS: When placing orders please refer to machine numbers in order to avoid confusion. Specify what operation is required, kind of glass used. It is always advisable to send sample Bulbs, Parts, Blue Prints, or specifications in order to avoid delay; state whether shipment is to be made by freight, express or parcel post. In the absence of these instructions, we will use our discretion.

ESTIMATES: When asking for estimates, kindly state distinctly what type and style of NEON tubes you intend to manufacture, as we make over 200 styles of machines, and this information is very essential.

SPECIAL MACHINES: If, at any time, you desire any special machines not listed, we will gladly build these machines from your blue prints or specifications. We have over 5,000 patterns of all types, and are, therefore, very well equipped to take care of your special requirements.

FOREWORD

The Eisler Electric Corporation specializes in the manufacture of equipment for the making of Neon Sign Luminous Tubes and Glass Products; we also manufacture a complete line of production machinery for turning out Power Tubes, Television Tubes, Radio Tubes and Incandescent Lamps.

The rapid growth of the Eisler Corporation bespeaks its importance to the industries it serves. Products bearing the name of Eisler are recognized the world over for perfection in design, dependability in operation.

Service behind Eisler products is uppermost. A complete engineering staff for working out customer's problems is always available.

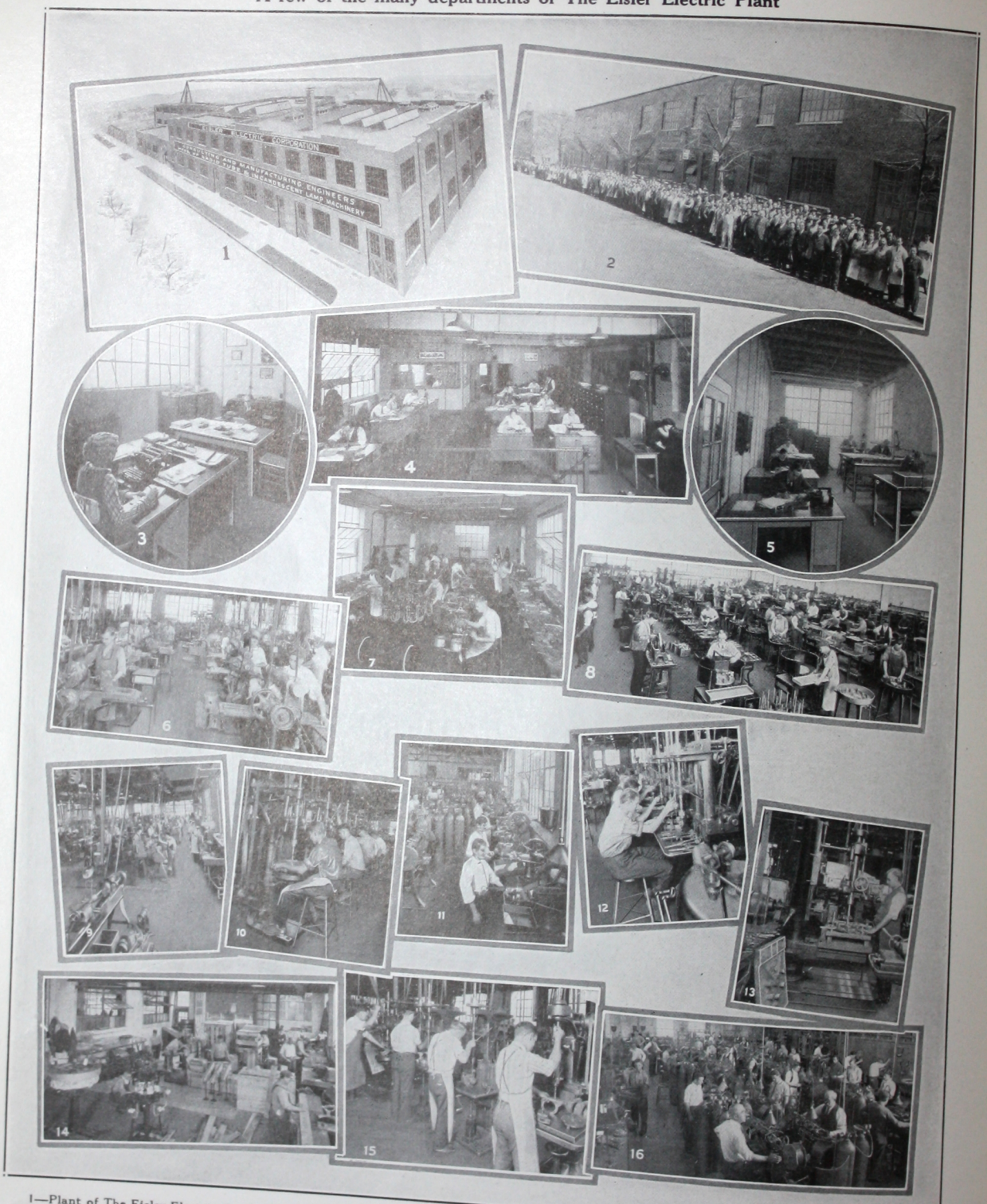
ENGINEERING AND METALLURGICAL SERVICE

The Eisler Electric Corporation maintains a complete Engineering and Metallurgical organization, skilled in every phase of machinery design and in problems of metallurgy. This staff is ready at any time to solve problems that inquiries may present. The engineering staff are specialists in the design of Neon Tubes and its allied branches of machinery. The Metallurgical engineers are skilled in the construction of metal elements employed in the previously mentioned products, such as Tungsten Alloys, Molybdenum, Copper Clad, etc.

A TRIP THROUGH THE EISLER ELECTRIC ORGANIZATION

Here is the Largest Organization of its Kind devoted exclusively to the manufacture of machinery for the production of Neon Luminous Tubes, Radio and Television Tubes, Incandescent Lamps and Glass Products.

A few of the many departments of The Eisler Electric Plant



1—Plant of The Eisler Electric Corporation.
2—Men who make the Eisler Electric Products.
3—Office of Charles Eisler.
4—Main Office.
5—Engineering.
6—Section of the Milling Department.
7—Experimental.
8—Assembly Department.
9—Corner of Main Machine Shop.
10—Precision Drilling.
11—Special Wire Department.
12—Gang Drills.
13—Radial Drilling.
14—Packing and Shipping Department.
15—High Speed Drilling
16—Leadwire Welding Department.

A Trip Through The Eisler Electric Metallurgical and Wire Drawing Department

For Wire Information See Pages 26 and 47.

1—Annealing Lead-In Wire.
2—Drawing Lead-In Rods.
3—Drawing Lead-In Wire.
4—Finishing Lead-In Wire.
5—Testing Tungsten-Alloy and Molybdenum Products.
6—Processing Tungsten-Alloy and Molybdenum Products.
7—Processing Lead-In Ingots.
8—Working Tungsten-Alloy and Molybdenum Rods.
9—Drawing Heavy Wire.
10—Drawing Fine Wire.
11—Cathode Assembly Department.
12—Cathode Spraying Department.
13—Testing Wire Products.
14—Testing Drawing Dies.
15—Shaping Substitute Dies.

A Few Typical Neon Tube Plant Installations and Various Operations

1. Neon Electrode Stem Making, Automatic.
2. Courtesy, C. I. Brink, Boston.
3. Neon Electrode Sealing Operation, Automatic.
4. Typical Neon Tube Glass Blowers Department.
5. Electrode Department, Courtesy National Neon Corp.
6. Crossfire Sealing of Large Glass Electrodes.
7. Shaping Neon Tubing on Tubular Burner.
8. Specialty Glass Blowing Department.
9. Courtesy, P. F. Yoerger Sign Co., Columbus.
10. Oxygen-Gas Crossfire Working of Pyrex Glass.
11. Typical Neon Tube Glass Department.
12. Courtesy, Brilliant Tube Sign Co., Seattle.
13. Courtesy, Electrical Products, Salt Lake City.

CONTENTS AND INDEX

BURNERS

For Gasoline, Water, Coal and Natural Gas

Showing a few of the many different sizes, types and arrangements of burners.

MIXERS, TORCHES, RIBBON BURNERS, GLASS WORKING TOOLS

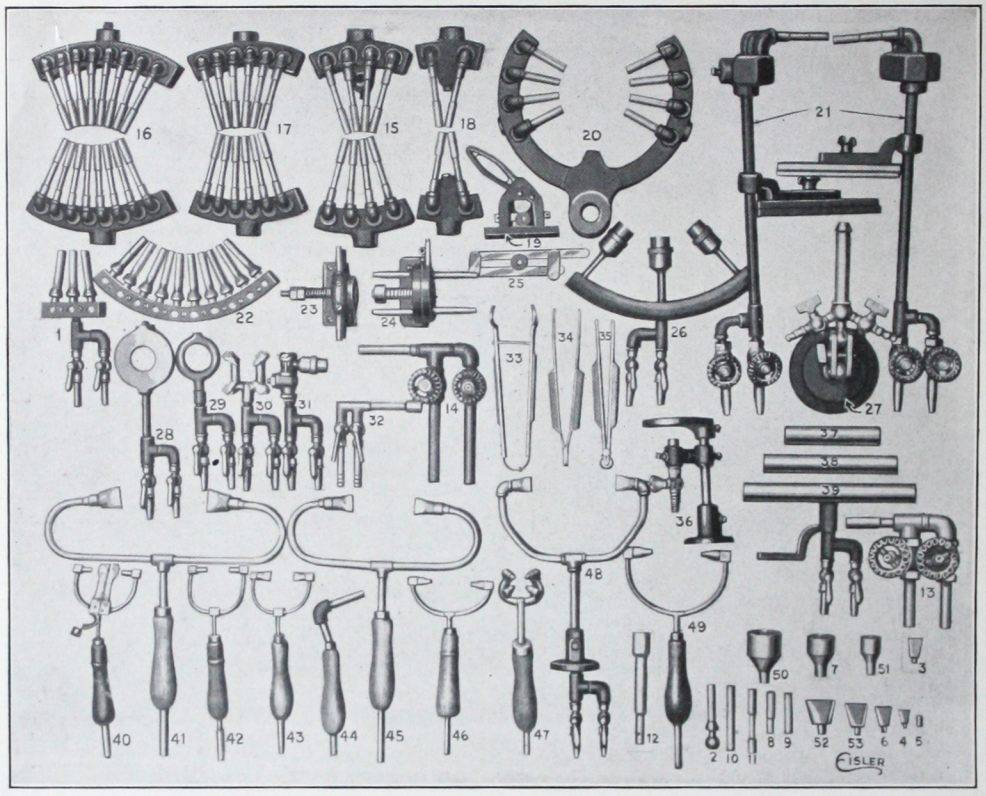


Illustration No. 117-D

Most items shown in this layout are also shown on other pages in this catalog

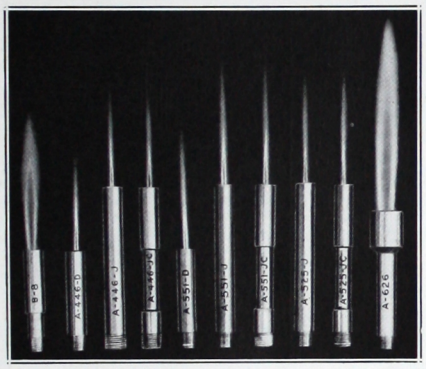
1—Ball joint adjustable burners with ⅛ inch gas and air mixer, adaptable for any type burner.
2—Ball joint socket with burner No. 9, can, however, be made with any type burner.
3—Fish tail burner ⅝ inch across face for use in all heavy type tipping torches.
4—½ inch fish tail burner across face to be used in light type splicing torches, also shown as A-228. See 46 & 43.
5—Fish tail burner ⅜ inch diameter, used in hand type tipping torches. See 40 & 42.
6—Fish tail burner 1 inch across face used in heavy type splicing torches, also shown as A-81A. See 48.
7—Cannon burner 1¼ inches across face, used for any special work.
8—Sleeve type cannon burner.
9—Finishing fire 2 inches long, also shown as A-446D.
10—Finishing fire 3 inches long, also shown as A-446J.
11—Finishing fire with flexible copper insert 3 inches long, for bench fires and universal use, also shown as A-446-JC.
12—Rose burner ¾ inch diameter at the tip, also shown as 626.
13—Cannon fire with ⅛ inch gas and air mixers with burner 8.
14—Cannon burner with ¼ inch gas and air mixer.
15—4 point segment fires with No. 11 burners for use on 21.
16—8 point segment fires with No. 11 burners for use on 21.
17—6 point segment fires with No. 11 burners for use on 21.
18—2 point segment fires with No. 11 burners for use on 21.
19—Bench type rubber tubing pinch cock, listed in our catalog as No. 112. Standard for ¾ and 1 inch O. D. rubber tubing.
20—Ring fires, with No. 9 burners, has a radius of 5 inches.
21—Bench fires, listed in our catalog as No. 115. Burner numbers 15, 16, 17, 18, as shown in this cut can be used on this machine.
22—10 point ball joint adjustable burners. Number 2, 8, 9, 10, 11, burners can be used on this machine. Adaptable for any purpose.
23—Light type adjustable gas and air (economizer) shut-off.
24—Heavy type gas and air (economizer) shut-off.
25—Rubber tube hand pinch cock, listed in our catalog as 112-H.
26—Half ring fire, can be used with burners No. 7, 50, 51, or any other combination.
27—Bench type adjustable cannon fire.
28—Crack off iron ⅛ inch gas and air mixer, listed in our catalog as 113-S.
29—Crack off iron for large neck bulbs.
30—4 burner tipping torch.
31—Adjustable ball joint rose burner with ⅛ inch gas and air mixer, burners No. 7, 50, 51 can be used.
32—Long stem rose burner with ⅛ inch gas and air mixer using burner No. 12.
33—Bulb extractor.
34—Light type sealing tweezer, shown in our catalog as No. 2, cut 150.
35—Heavy type sealing tweezer with ball joint shown in our catalog as No. 3, cut 150.
36—Shallow Bunsen Burner type soldering pot.
37—38—39—Ribbon fires used for annealing or working long glass tubing. Can be furnished in any length from 4 inches to 48 inches for gas and air.
40—Light type double burner tipping torch with nickel shields, with burner No. 5. Shown as No. 114-DS.
41—Heavy type splicing torch for heavy glass work with burner No. 52.
42—Tipping torch with burner No. 5. Shown as Burner No. 114-D.
43—Tipping torch with ½ inch wide fish tail burner, with burner No. 4.
44—Tipping torch with single fire No. 9. Shown as No. 114-S.
45—Splicing torch with burner No. 53.
46—Heavy type tipping torch with burner No. 4. Shown as No. 114-DE.
47—4 Burner ring type hand tipping torch, used where sharp fires are required, also shown as No. 114Q.
48—Bench type Heavy Duty splicing or annealing fires with gas and air mixer with burners No. 52 or 53.
49—Heavy type tipping torch with burner No. 6 or 53. Shown as No. 114-DF.
50—Flat cannon burner. Can be made up to 2½ inch in diameter.
51—Flat cannon burner same as 7 and 50, ¾ inch across face.
52—Fish tail burner 1⅛ inches across face, also shown as A-420C.
53—Fish tail burner 1 inch across face, also shown as A-332.

GLASS FIRES

Glass fires are employed in the manufacture of incandescent lamps, radio tubes, neon sign luminous tubes, for special glass working and etc. According to requirements, various type of burners are needed for shaping, tipping off, sealing, constricting, preheating, annealing, etc.

These burners may be used for manufactured gas with the exceptions of A-551-J and A-551-JC.

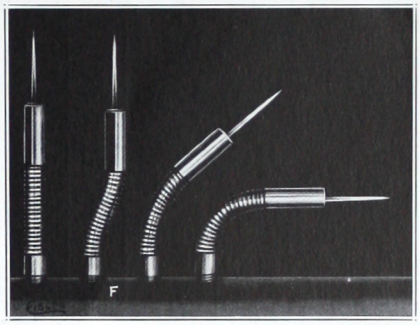
All burners shown operate to best advantage with air pressure of 2 to 3 pounds per square inch, and gas pressure 10 to 13 inches of water column.



Numbers As On Illustration

Burner No.	Length of Flame	Length of Burner	Thread Size
B-8	3″	2″	1/8″ Standard male Pipe Thread
A-446D	3 3/4″	2″	
A-446J A-446JC		3 1/4″	
A-551D	4 1/2″	2″	
A-551J A-551JC		3 1/4″	
A-525J A-525JC	5 1/4″	3 1/4″	
A-626	5 3/4″	2 3/4″	

FINS are readily provided to any style glass fire. The burner may be bent to any shape desired, but is not to be considered as flexible.

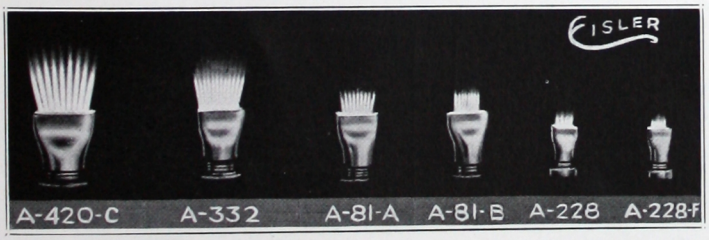


FISHTAIL BURNERS

Fishtail Burners are employed on tipping-off torches, splicing torches, flaring, stem making, glazing, pre-heating, etc.
Fishtail burner flames as illustration shows, burn in fan like manner. These burners are especially desirable as they burn with great intensity, heating object over limited area.

All fishtail burners shown operate to best advantage with air pressure of 2 to 3 pounds per square inch and gas pressure 10 to 13 inches of water column.

When Ordering Burners, Specify Pressure of Gas and Air Available



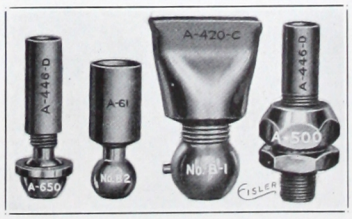
BALL JOINTS

A-650 Ball 1/2″ diameter with washer, may be readily clamped in place on manifold. Thread 5/16″ 27 male.

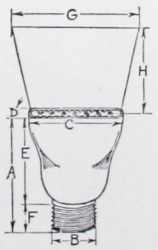
B-2 Ball 3/8″ diameter made one piece with any burner desired.

B-1 Ball 3/4″ diameter with pin. Thread 1/4″ pipe female.

A-500 Ball joint, and socket with 1/8″ male and 1/8″ female in ball. Locking nut will hold burner at any angle desired.



Burner No.	Length of Burner "A"	Width of Burner "C"	Thickness of Burner "D"	Height "E"	Thread, Male, "B"	Height of Flame "H"	Width of Flame "G"
A-420C	1 7/16″	1 7/32″	5/16″	1 1/16″	1/4″ pipe	2″	2 1/8″
A-332	1 3/8″	15/16″	1/4″	1″	1/4″ pipe	2 1/2″	1 1/2″
A-81A	1 5/16″	13/16″	9/32″	31/32″	1/8″ pipe	3″	7/8″
A-81B	1 5/16″	13/16″	9/32″	31/32″	1/8″ pipe	2 3/4″	5/8″
A-228	15/16″	9/16″	1/4″	11/16″	1/4 x 27″	1 3/4″	1/2″
A-228F	15/16″	9/16″	1/4″	11/16″	1/4 x 27″	1″	1/4″



BLAST BURNERS

Best results are obtained with Blast Torches when a constant pressure of gas is maintained at 10 to 13 inches of water column, and air at 2 to 3 pounds per square inch.

Caution: When employing blast torches using oxygen, a fire check on gas line must be utilized to prevent flash-backs, because of the rapidity of the flame propagation.

BLAST BURNER—LIGHT TYPE

Gas and Air Burner Complete with set of three nipples

Burner No. B-27-L

BLAST BURNER—LIGHT TYPE

Gas, Air and Oxygen burner recommended for use with pyrex glass. Complete with set of three nipples.

Burner No. B-27-OL

BLAST BURNER—HEAVY TYPE

Same as burner No. B-27-OL but larger and more powerful. Directly connected to oxygen tank. Complete with set of two nipples.

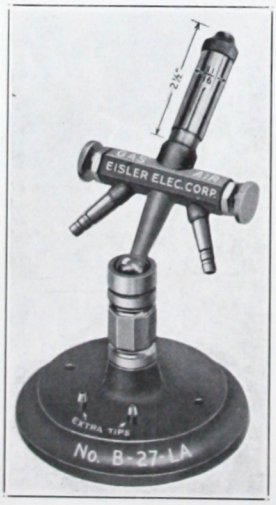
Burner No. B-27-O

WHEN ORDERING, PLEASE SPECIFY TYPE OF GAS TO BE USED

All Blast Burners Easily Detached for Use as Hand Blowpipes

BLAST BURNER—LIGHT TYPE

Accurate regulation of both gas and air supply is readily secured by the needle valves.



Burner No. B-27-LA

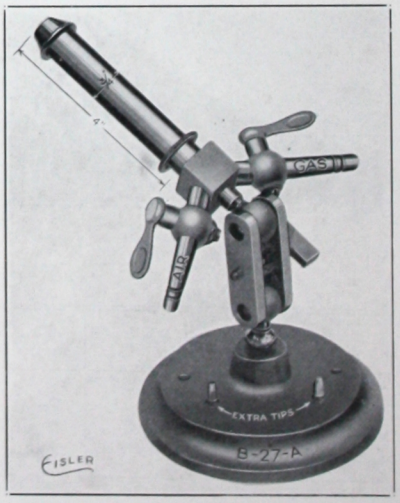
BLAST BURNER—HEAVY POWERFUL TYPE

By moving lever, gas and air are both adjusted; from a small pointed jet flame to a large brush flame.

Burner No. B-27-Q

BLAST BURNER—LIGHT TYPE

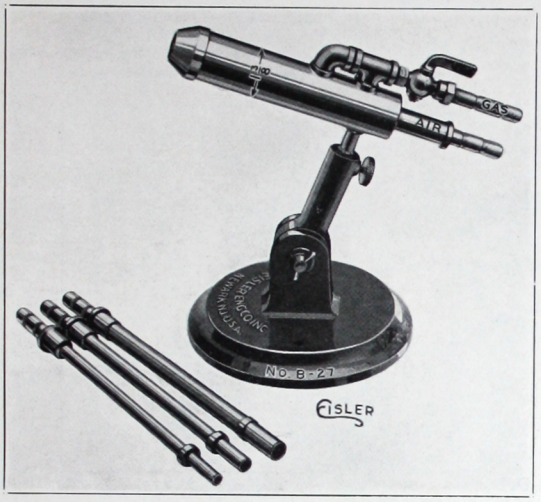
Mounted on ball joint, with extra two jets.



Burner No. B-27-A

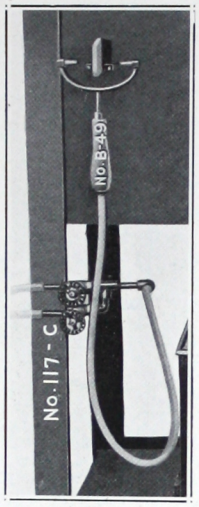
BLAST BURNERS—TIPPING TORCHES

BLAST BURNER — HEAVY TYPE
Powerful gas and air burner with set of three nipples.

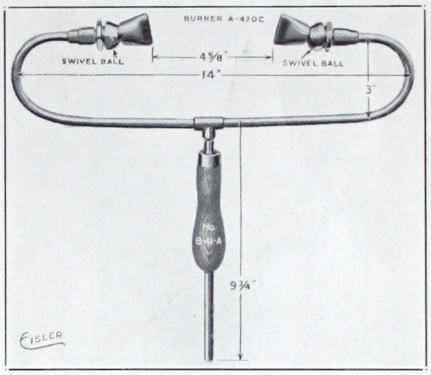


Burner No. B-27

VIEW OF TIPPING TORCH WITH MIXER ON EXHAUST POSITION

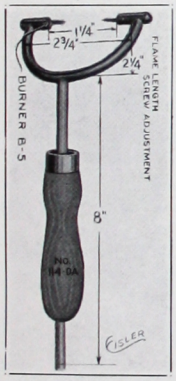


SWIVEL TYPE SPLICING TORCH FOR HEAVY GLASS WORK



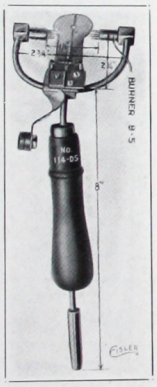
No. B-41-A

DOUBLE TIPPING TORCH
With Adjustable Flame Burner



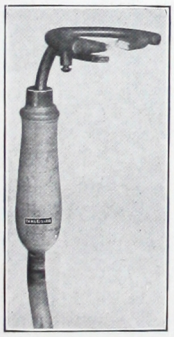
No. 114-DA

DOUBLE TIPPING TORCH
With Shutter and Burner No. B-5



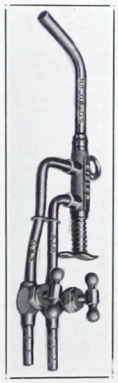
No. 114-DS

DOUBLE TIPPING TORCH
With Adjustable Flame Burner



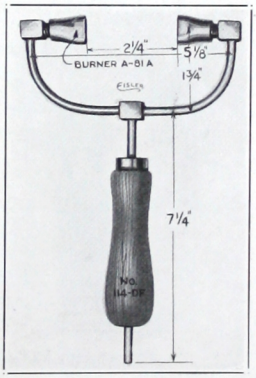
No. 114-F

Adjustable Flame Hand Tipping Torch



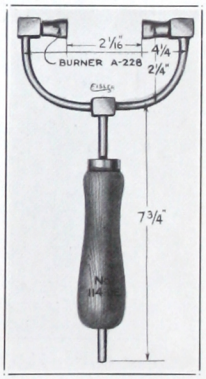
No. 114-QS

DOUBLE TIPPING TORCH
With Burner No. B-6 or A-81A



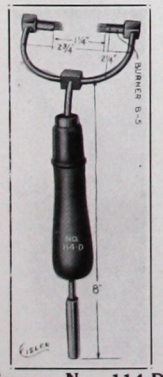
No. 114-DF

DOUBLE TIPPING TORCH
With Burner No. B-4 or A-228



No. 114-DE

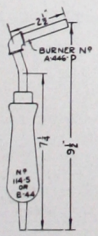
DOUBLE TIPPING TORCH
With Burner No. B-5



Burner No. 114-D

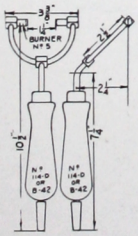
SPECIAL TORCHES MADE TO SUIT REQUIREMENTS SEND SKETCH

SINGLE FIRE TIPPING TORCH



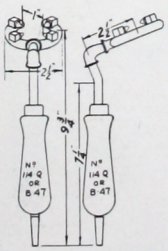
No. 114-S

DOUBLE TIPPING TORCH



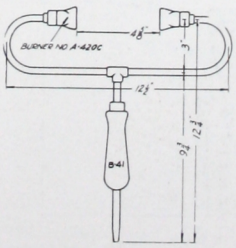
No. 114-D

FOUR BURNER TIPPING TORCH



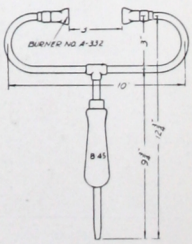
No. 114-Q

SPLICING TORCH FOR HEAVY GLASS WORK



No. B-41

SPLICING TORCH FOR HEAVY GLASS WORK

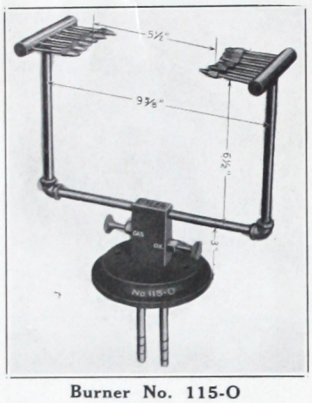


No. B-45

GAS - OXYGEN CROSSFIRES AND HAND TORCHES

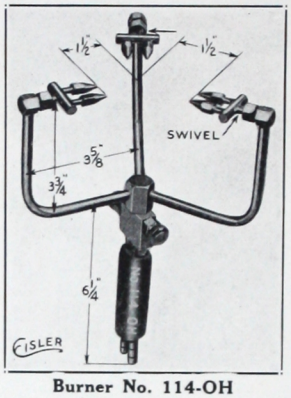
Each complete burner is equipped with a special constructed mixer, which properly proportions the gas and oxygen. Needle valves with fine thread aid in securing proper mixture. The burners are made entirely of brass, all joints being silver soldered.

GAS-OXYGEN CROSSFIRE
Made Two to Twelve Jets



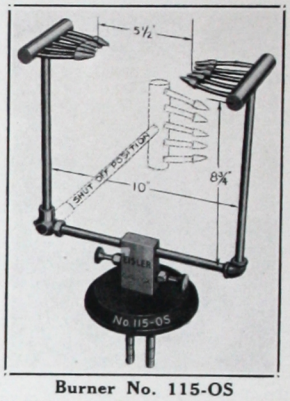
Burner No. 115-O

TRIPLE TWO JET TIPPING TORCH



Burner No. 114-OH

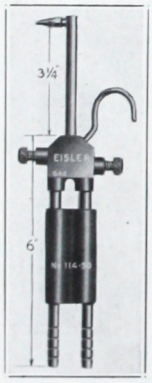
SIX JET GAS-OXYGEN CROSSFIRE
Same as Burner No. 115-O, except for Shut-Off of one side, permitting the use of one as desired.



Burner No. 115-OS

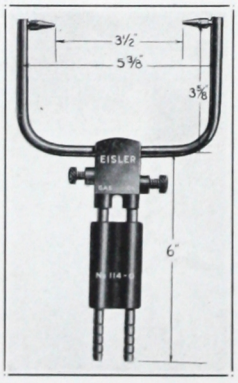
IF THERE IS ANY SPECIAL STYLE OR SHAPE OF GAS-OXYGEN TORCH DESIRED, WE WILL BUILD SAME TO YOUR SPECIFICATIONS.

SINGLE JET TIPPING TORCH



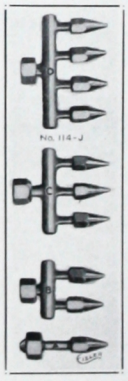
Burner No. 114-SO

DOUBLE JET TIPPING TORCH



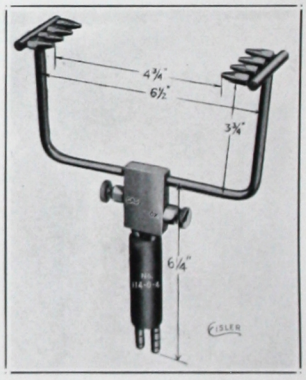
Burner No. 114-O

INTERCHANGEABLE JETS



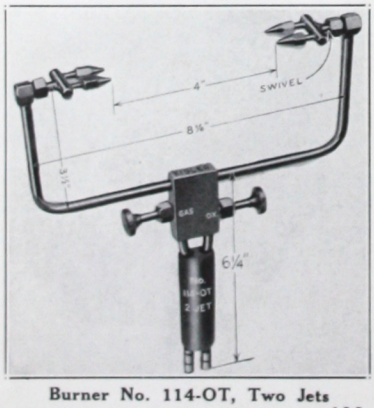
Burners No. 114-J A, B, C and D

DOUBLE FOUR JET TIPPING TORCH



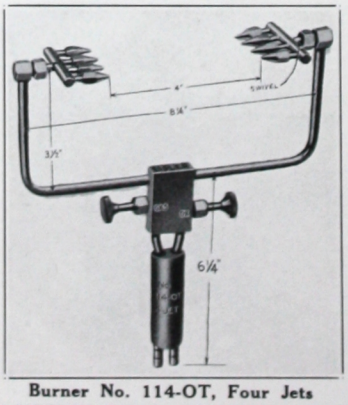
Burner No. 114-O-4

DOUBLE TWO JET TIPPING TORCH



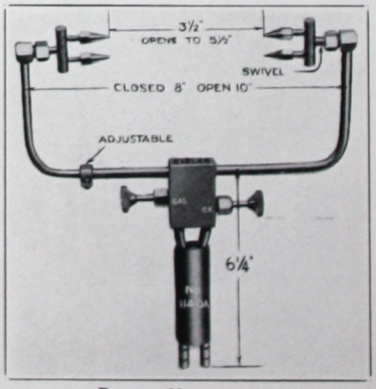
Burner No. 114-OT, Two Jets

DOUBLE FOUR JET TIPPING TORCH



Burner No. 114-OT, Four Jets

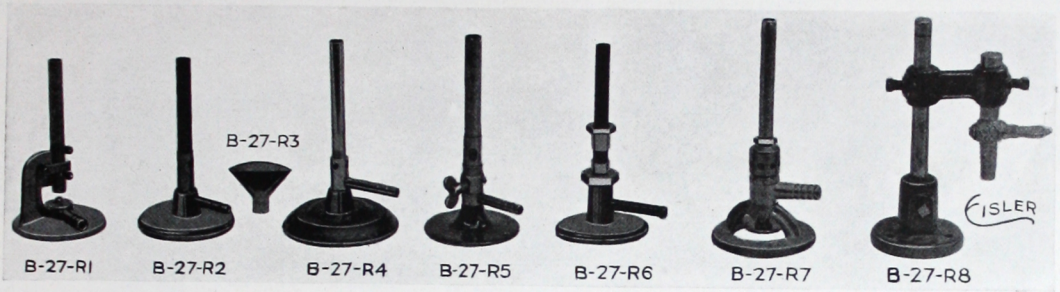
DOUBLE TWO JET ADJUSTABLE TIPPING TORCH

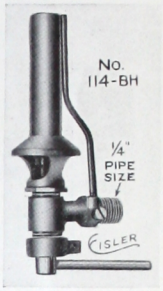


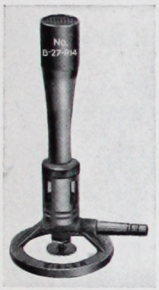
Burner No. 114-OA

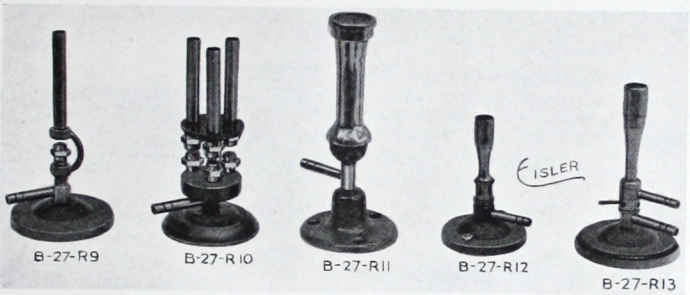
ALL GAS-OXYGEN FIRES COMPLETE WITH MIXER

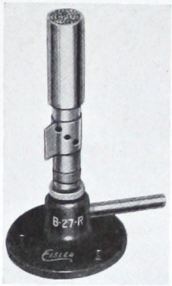
BUNSEN BURNERS

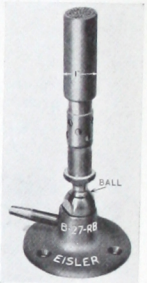












B-27-R1 BUNSEN BURNER, for coal or water gas. Simple construction; very inexpensive type; supply of air adjusted by revolving the tube.

B-27-R2 BUNSEN BURNER, for coal and water gas, with air regulator, easily adjusted as required.

B-27-R3 WINGTOPS for Bunsen Burners.

B-27-R4 BUNSEN BURNER, for coal, water, gasoline and natural gas. Air supply is adjusted by turning tube of burner which is threaded. The gas supply is regulated accurately by turning base, which raises and lowers pin.

B-27-R5 BUNSEN BURNER, for coal and water gas, same as B-27-R2, only equipped with pilot flame and stopcock.

B-27-R6 BUNSEN BURNER, for gasoline, water, coal and natural gas. Screw adjustment for both air and gas; very small flame readily secured without possibility of striking back.

B-27-R7 BUNSEN BURNER, for gasoline, water, coal and natural gas, with screw adjustment for air and gas.

B-27-R8 BURNER, for gas under pressure.

114-BT BUNSEN BURNER, Hand Torch equipped with pilot light, and push button valve for turning on and off gas instantly as desired. Gives high temperature flame.

No. 114-BT

114-BH BUNSEN BURNER, same as 114-BT, but with shut-off handle. May be used singly or on circular cores, straight manifold, etc.

B-27-R9 BUNSEN BURNER, for gasoline, water, coal and natural gas. Fine adjustment for air and gas.

B-27-R10 BUNSEN BURNER, three flame, same as B-27-R9 on one base with one inlet pipe.

B-27-R11 BUNSEN BURNER, for water and coal gas; easily turned down to small soft flame. Gauge top face 1⅜ inch diameter.

B-27-R12 BURNER, for water and coal gas. Will produce high temperature ranging below and above 1000° C according to size of burner.

B-27-R13 BLAST BURNER; when gas and air are supplied at a constant pressure, a very high temperature flame is secured. Extension of brass pipe furnished when required for furnace use.

B-27-R14 BURNER, for gasoline, water, coal and natural gas. One inch diameter across face of flame; easily adjusted air; screw pin gas regulation.

B-27-R BUNSEN BURNER, screw gas pin adjustment, for gas under pressure, quick air adjustment.

B-27-RB BUNSEN BURNER, same as B-27-R, with flexible ball joint.

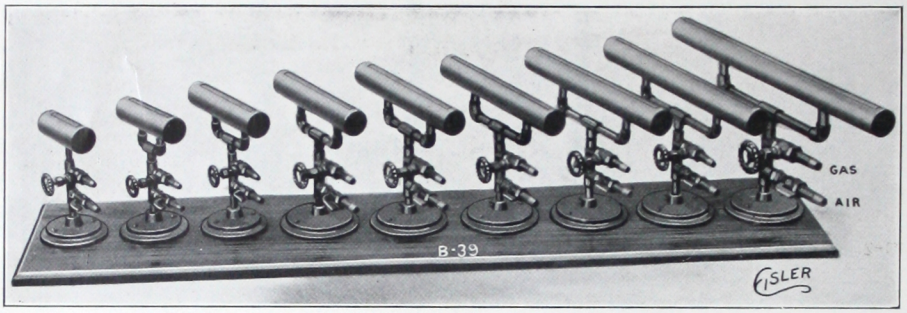
TUBULAR BURNERS—NON-SAG

TUBULAR BURNERS FOR GAS AND AIR

Made in all lengths and sizes, from two to forty-eight inches. Recommended for lead, lime and pyrex glass working. Unconditionally guaranteed not to sag under continuous service.

Pat. No. 1704359

CLOSE-UP VIEW OF BURNER



Burner No. B-39

Burner No. B-39

TUBULAR BURNERS—ECONOMICAL TYPE

Heretofore, Tubular Burners have always remained burning when not in use. Careful surveys show burners only used approximately 5% of operating time. With these new types, as shown in illustration, there is economy in gas consumption. Burns only when required.

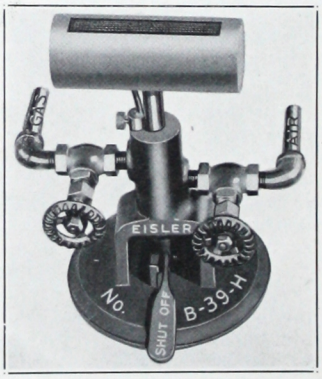
FOOT OPERATED ECONOMIZER ATTACHED TO STANDARD TUBULAR BURNER

Equipped with B-24 economizer and pilot. Apparatus may be readily attached to burners now in use.

Burner No. B-39-E with B-24

NEW TYPE HAND-LEVER OPERATED TUBULAR BURNER

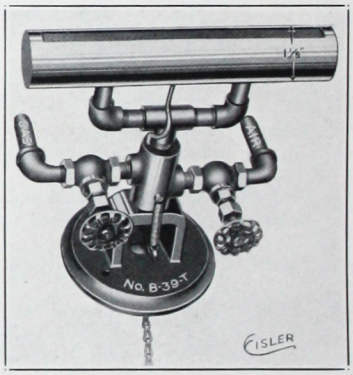
Standard, equipped with pilot and quick automatic hand lever shut off. Made in all lengths.



Burner No. B-39-H

NEW TYPE FOOT-OPERATED TUBULAR BURNER

Standard, equipped with pilot and quick automatic foot lever shut off. Made in all lengths.



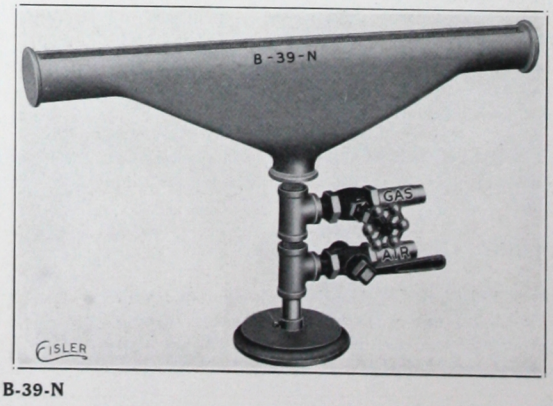
Burner No. B-39-T

NEW TYPE TUBULAR BURNER

This new type tubular burner, because of its special gas chamber construction, will give more intense fire. Especially recommended for pyrex glass working.

Made Only 12 and 16 Inches

Made Only 18 and 24 Inches

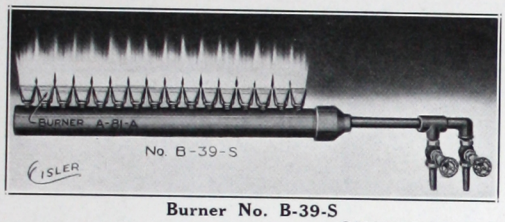


Burners No. B-39-N

MANIFOLD BURNERS

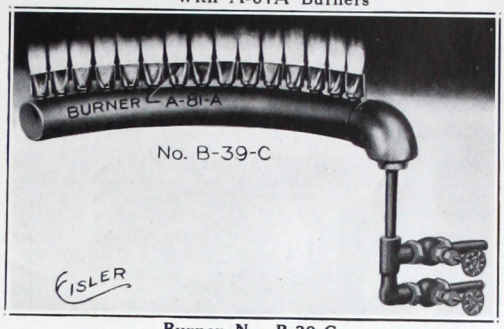
These manifold burners are made in all styles and lengths. Made to suit any special requirement.

STRAIGHT MANIFOLD BURNER
With A-81A Burners



Burner No. B-39-S

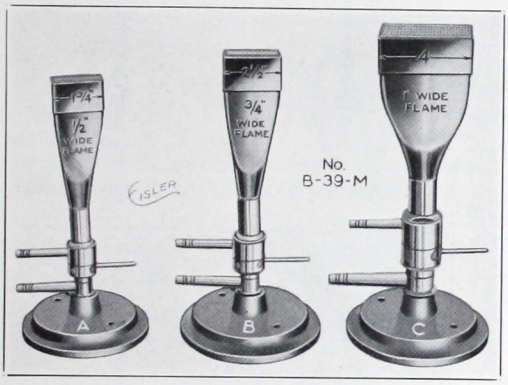
CURVED MANIFOLD BURNER
With A-81A Burners



Burner No. B-39-C

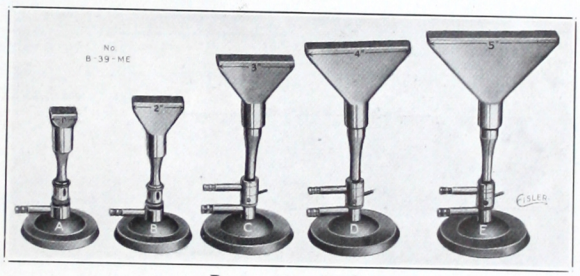
SPECIAL FISHTAIL BURNERS

These burners furnish a very powerful and intense fire and are made only from 1 to 4 inches.



Burner No. B-39-M

BURNER FLAME IS 1 INCH WIDE

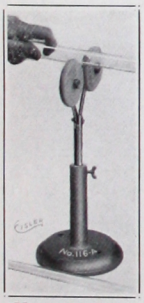


Burner No. B-39-ME

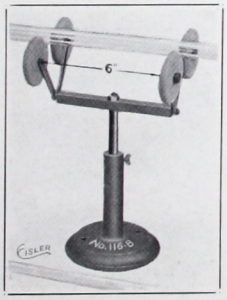
GLASS ROLLERS

A few of the many different types and styles of glass rollers. Also made pulley driven for preheating arrangements.

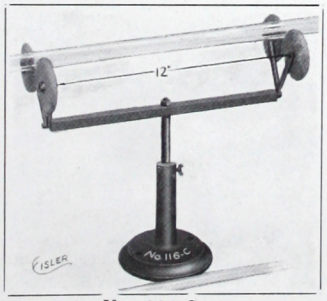
ASBESTOS WHEEL GLASS ROLLERS



No. 116-A

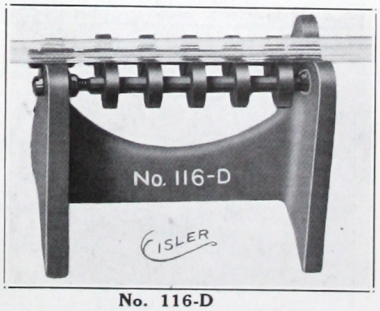


No. 116-B



No. 116-C

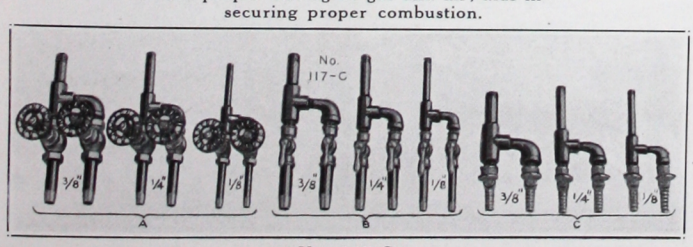
STEEL WHEEL GLASS ROLLER



No. 116-D

GAS AND AIR MIXERS

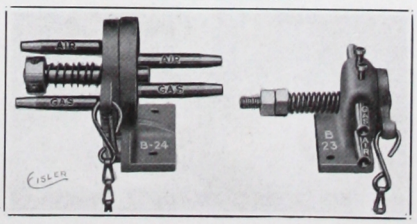
Valves with special constructed inlet are essential for proper mixing of gas and air; aids in securing proper combustion.



No. 117-C

GAS AND AIR ECONOMIZERS

Essential for gas economy; cuts off full gas supply, leaving only small flame at burner.



No. B-24 No. B-23

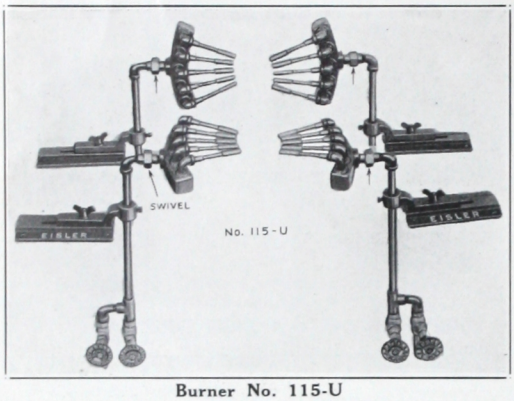
CROSSFIRES—BENCH TYPE

For Gasoline, Water, Coal and Natural Gas

SPECIFY TYPE OF GAS USED WHEN ORDERING

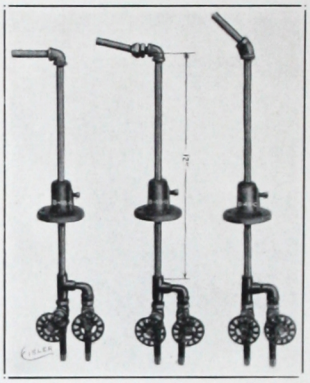
Crossfires as shown by illustration are adjustable for height and distance between flames. A very intense heat is secured. All types of burners may be employed.

CROSSFIRE WITH SWIVEL JOINT



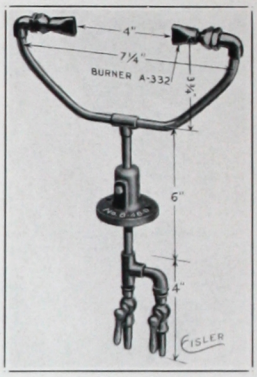
Burner No. 115-U

SINGLE JET FIRES



B-48-A B-48-B B-48-C

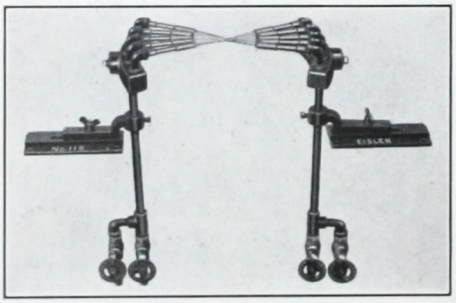
FISHTAIL CROSSFIRE



B-48-D

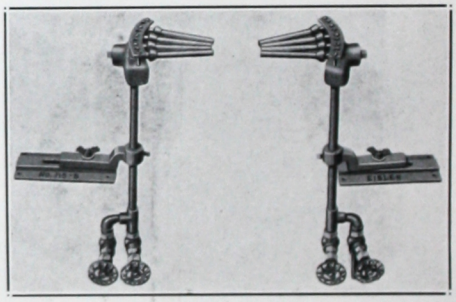
FIVE-BURNER STANDARD CROSSFIRE

Made from one to Twelve Burners



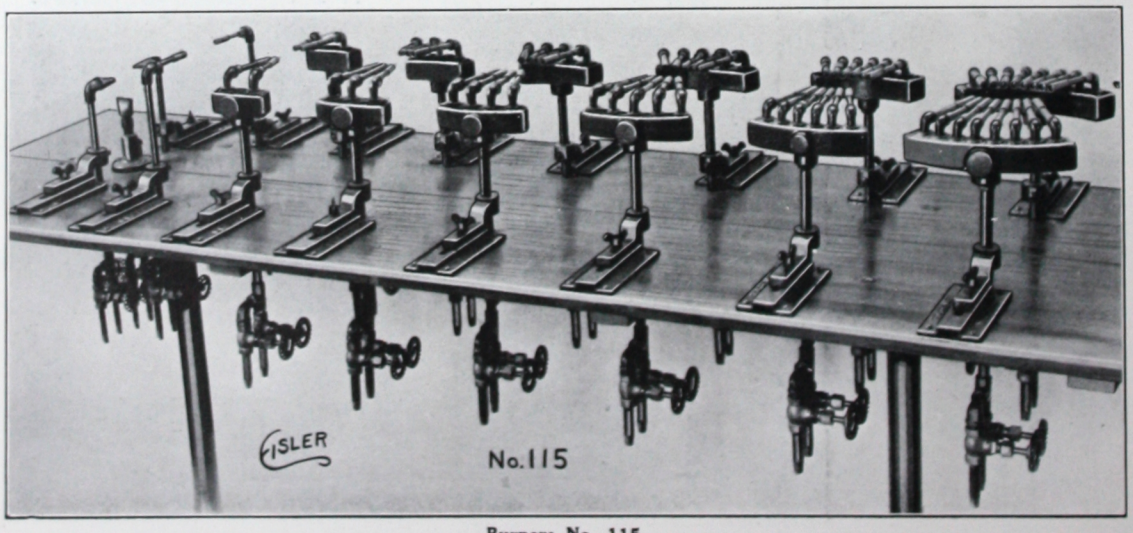
Burner No. 115

FOUR-BURNER BALL JOINT CROSSFIRE



Burner No. 115-B

ONE TO TWELVE-BURNER CROSSFIRES—With Suitable ⅛" or ¼" Mixers

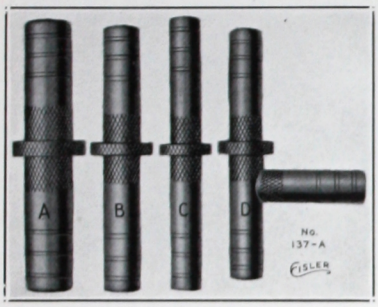


Burners No. 115

SWIVELS

Made in All Sizes. Specify When Ordering

GLASS BLOWERS STRAIGHT AND OFFSET SWIVELS

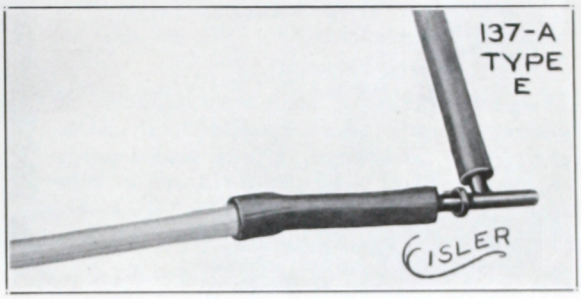


No. 137-A
A, B, C and D

TIPPING TORCH WITH STRAIGHT SWIVEL

No. 137-A
Type C

OFFSET SWIVEL



No. 137-A
Type E

BLOWPIPES

Recommended for industrial use such as local hardening and annealing, brazing, jewelry soldering and general repair work. Suitable for use with gasoline, water, natural, coal or other gases. Gas pressure recommended 3″ to 6″ water column; air at 2 pounds per square inch.

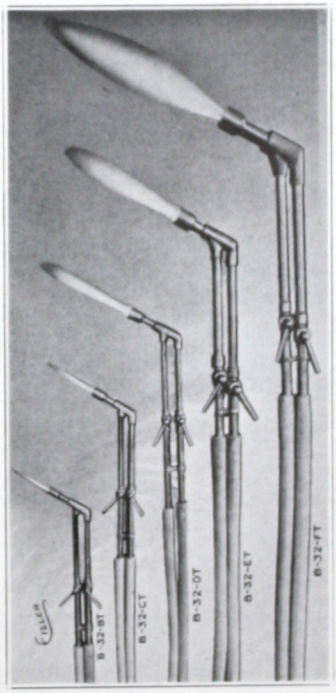
By adjusting cocks, quick changes are readily obtained from mild soft fires to intense sharp heating fires.

Maximum combustion efficiency is readily secured by adjusting air and gas cocks.

STAND BLOWPIPES

Numbers as on Illustration

HAND BLOWPIPES



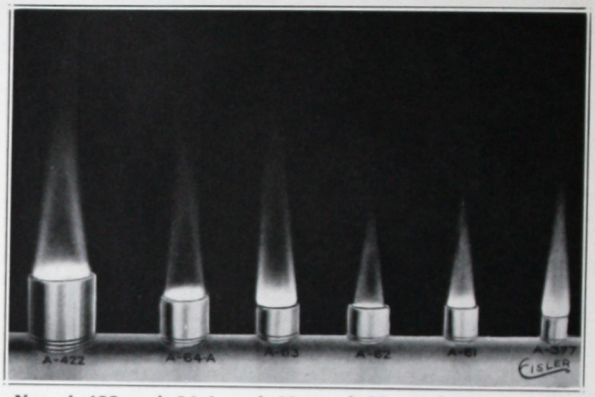
Numbers as on Illustration

Hand-Blow-pipe No.	Stand Blow-pipe No.	Approximate Size of Flame, Inches		Supply Connections Outside Diameter, Inches		Hand Blowpipes	Stand Blowpipes
		Diameter	Length	Gas	Air	Length Over All, Inches	Length Over All, Inches
B-32-AT	B-32-A	1/4	3	5/16	5/16	11 1/4	3 5/8
B-32-BT	B-32-B	5/16	3 3/4	5/16	5/16	11 1/4	3 5/8
B-32-CT	B-32-C	1/2	4 3/4—5	5/16	5/16	11 1/4	3 5/8
B-32-DT	B-32-D	3/4	5 3/4	3/8	3/8	14	4 1/2
B-32-ET	B-32-E	1	6 1/2	9/16	9/16	16	5 1/2
B-32-FT	B-32-F	2	9 1/2	11/16	11/16	19	7 1/2

SOFT FIRES

Soft fire burner tips emit a steady, soft focusless flame suitable for heating under pots and vessels, for core baking, rotary drums, tempering plates and for other numerous heating purposes. The flame is readily adjusted to meet exacting requirements.

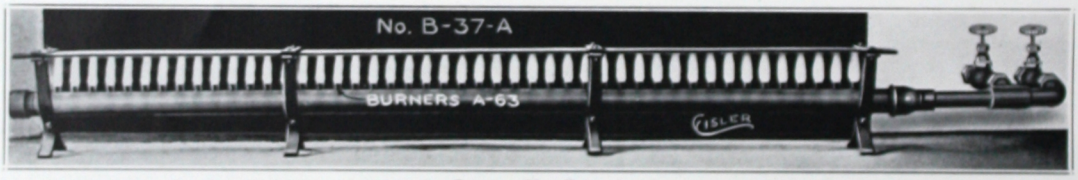
These burner tips are made into manifolds to suit requirements, or are furnished individually as ordered. The size of tip to be used depends on amount of heat to be distributed over a given area.



Nos. A-422 A-64-A A-63 A-62 A-61 A-377

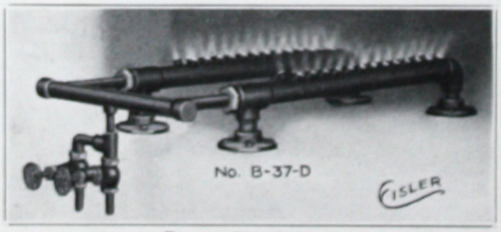
Burner Head No.	Pipe Size Thread, Inches	Overall Length of Burner, Inches	Standard Spacing Burner Tips in Manifold, Inches
A-422	3/4	1 1/2	2
A- 64-A	1/2	1	1 3/8
A- 63	3/8	3/4	1 3/8
A- 62	3/8	3/4	1 3/8
A- 61	1/4	5/8	1
A-377	1/8	9/16	1

HEATING BURNERS
FOR HEATING OVENS OF VARIOUS KINDS



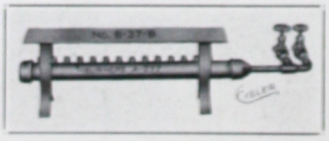
Burner No. B-37-A

DOUBLE ROW SOFT FIRE BURNER



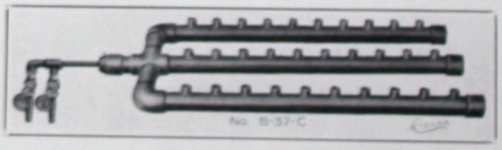
Burner No. B-37-D

HEATING BURNER USED FOR TEMPERING POT AND OTHER BATHS HEATED AT LOW TEMPERATURES



Burner No. B-37-B

TRIPLE ROW SOFT FIRE BURNER
With Single Pipe Inlet



Burner No. B-37-C

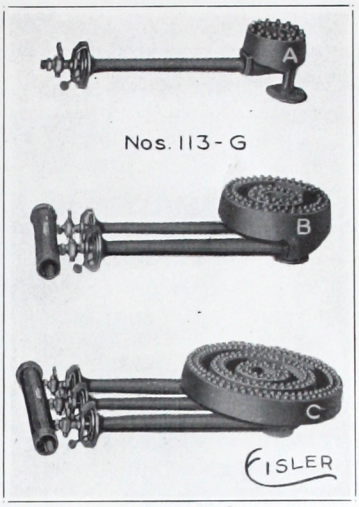
HEATING BURNERS MADE TO SUIT SPECIAL REQUIREMENTS

ATMOSPHERIC GAS BURNER

High Flame Temperature and perfect combustion are obtained by properly adjusting both direct jet regulator and hood caps with cock valve.

The Burners are so constructed that plenty of air reaches each burner flame.

Burners are constructed of smooth gray iron casting and contain two rows of burners. Made in three individual rings which can be used in pairs or in triple as shown in illustration.

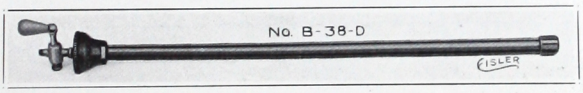


No. 113-G
A, B and C

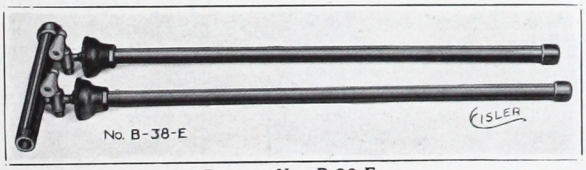
DRILLED PIPE BURNERS

Pipe burners are constructed of iron pipe; burner holes are drilled in pipe. With cock valve, jet regulator and hood cap, adjustments are readily made for perfect combustion. These pipe burners are made in all sizes, lengths and styles, made to suit specifications.

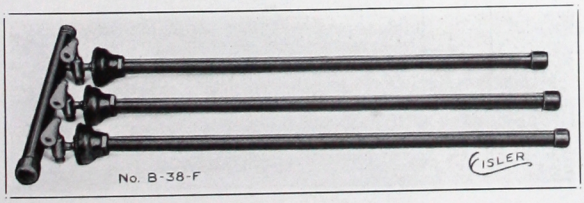
A FEW TYPES MADE FOR VARIOUS PURPOSES



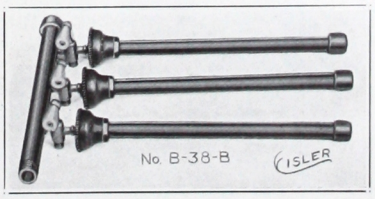
Burner No. B-38-D



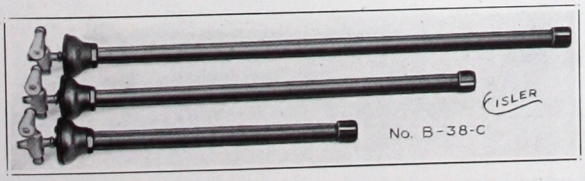
Burner No. B-38-E



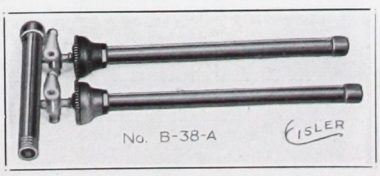
Burner No. B-38-F



Burner No. B-38-B



Burner No. B-38-C



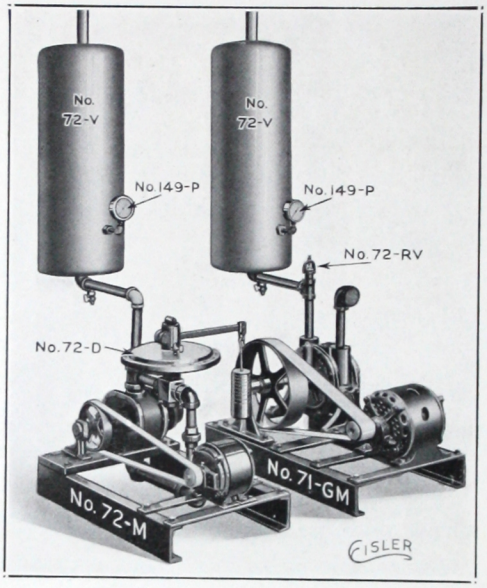
Burner No. B-38-A

GAS AND AIR PRESSURE MACHINES

The success of your production depends on the proper selection, types and sizes of your Power House Equipment. Most important is the proper ratio or pressure of Gas and Air. Let Eisler Electric advise you what sizes and types you should have for your factory. "It will pay you."

Air Pressure Blower, Gas Booster and Regulators

AUTOMATIC REGULATORS AID IN MAINTAINING CONSTANT PRESSURE



TANKS AID IN MAINTAINING A CONSTANT PRESSURE

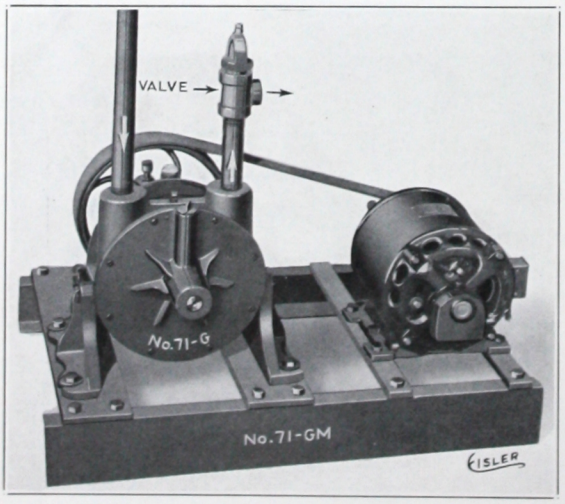
Typical Gas and Air Booster Installation

SILENT TYPE

AIR PRESSURE BLOWER

Supplied With or Without Motor Drive and Frame

Direct Belt Drive — Made in Twelve Sizes



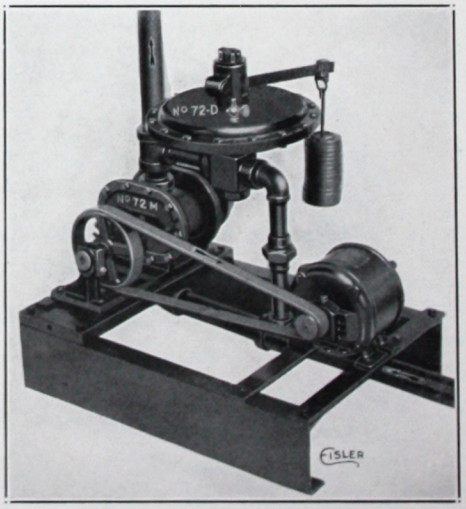
Machine No. 71-GM

SILENT TYPE

GAS BOOSTER AND REGULATOR

Supplied With or Without Motor Drive and Frame

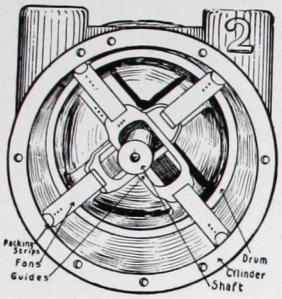
Direct Belt Drive — Made in Six Sizes



Machine No. 72-M

SEE NEXT PAGE FOR POWER PLANT DATA

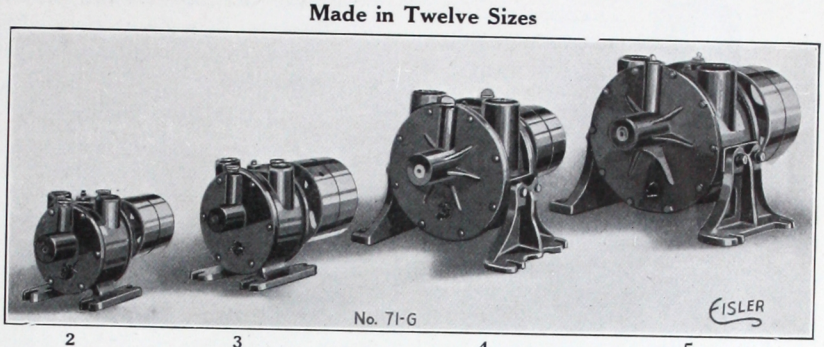
INTERNAL VIEW OF SILENT TYPE AIR PRESSURE BLOWER



Size No. 71-G, 1, 2 and 3

SILENT TYPE AIR PRESSURE BLOWERS

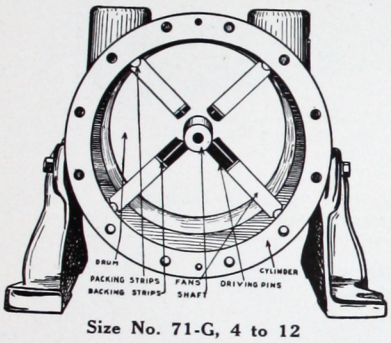
Made in Twelve Sizes



2 3 4 5

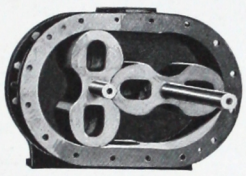
Machine No. 71-G

INTERNAL VIEW OF SILENT TYPE AIR PRESSURE BLOWER



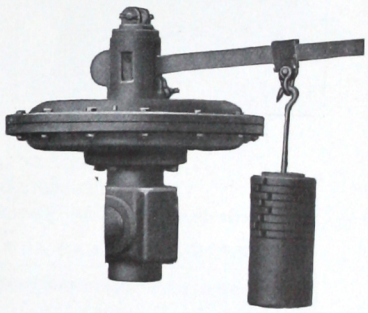
Size No. 71-G, 4 to 12

Interior View of Silent Type Gas Booster



No. 72-M

DIAPHRAGM REGULATOR FOR GAS AND AIR



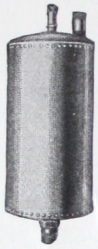
Machine No. 72-D

DETAILED INFORMATION ON SILENT TYPE AIR PRESSURE BLOWERS

No. 71-G	Free Air Capacity							
Size No.	Cubic in. per Rev.	Cubic Feet per Minute Maximum Speed	Revolutions per Minute Maximum Speed	Horse Power Approximate at 3 Pounds Pressure	Pulleys Inches	Net Weight Pounds	Pipe Size, Inlet and Outlet	Floor Space Inches
1	20	6.9	600	⅛	4x1	42	½"	14x10
2	45	13.	500	¼	4x1½	55	¾"	16x11
3	125	25.3	350	½	6x2½	145	1"	25x20
4	280	40.5	250	1	9x3	240	1½"	30x23
5	460	53.2	200	1½	10x3	330	2"	37x25
6	690	79.8	200	2	12x4	570	2"	41x25
8	1050	121.5	200	3½	14x6	790	2½"	50x27
10	1660	192.	200	5	18x6	1050	3"	56x33
12	3390	392.3	200	7	20x6	1770	4"	62x36

DETAILED INFORMATION ON SILENT TYPE GAS BOOSTERS

No. 72-M	GAS PUMP SIZE			Maximum Speed R.P.M	Pressure Pounds per Sq. In.	Capacity Cu. Ft. per Min. Net	H. P. at rated R. P. M. & Pressure	Pulley Size Inches	Weight Lbs.
No.	Gear Case Diam. Lgth.	Displ. Cu. Ft. per Rev.	Outlet and Inlet Diameter						
1	2½x 4	0.03	1	1200	1	20	0.17	6x1¼	65
					2	10	0.34		
3	3½x 5⅞	0.10	1½	850	1	50	0.41	7x1½	95
					2	29	0.82		
3½	4¼x 8	0.20	2½	750	1	119	0.71	8x2	180
					2	97	1.42		
4	5 x10	0.34	3	650	1	170	1.05	10x3	280
					2	147	2.10		
4½	5¾x14⅜	0.66	4	550	1	300	1.72	14x4	455
					2	238	3.44		
5	6½x16¼	0.94	6	500	1	375	2.22	16x5	595
					2	345	4.45		



AIR TANK WITH RELIEF VALVE

No. 72-V

Tanks for gas and air are recommended with Eisler Gas Boosters and Air Pressure Blowers; they are of great advantage where a close regulation of pressure is required.

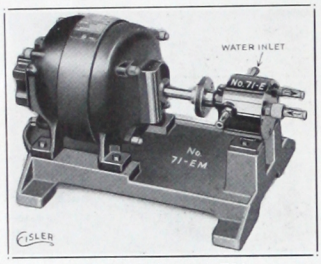
STOCK SIZE TANKS

No. 1.....15 Gallon
No. 2.....30 Gallon
No. 3.....50 Gallon

RELIEF VALVE

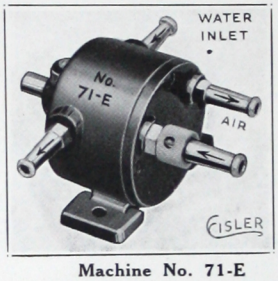
No. 72-RV

DIRECT DRIVEN, WATER COOLED, SMALL TYPE AIR BLOWER



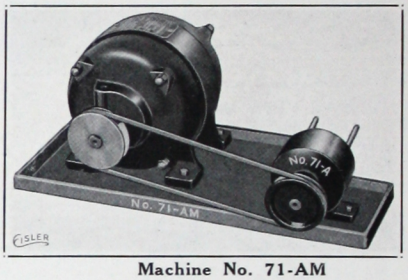
Machine No. 71-EM

WATER COOLED, SMALL TYPE AIR BLOWER



Machine No. 71-E

BELT DRIVEN, SMALL TYPE AIR BLOWER

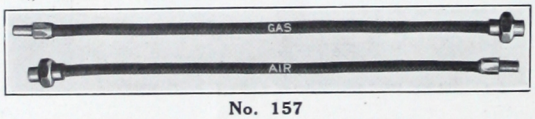


Machine No. 71-AM

ACCESSORIES

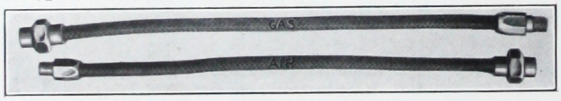
FLEXIBLE METAL HOSE
Made in All Lengths—Complete with Fittings

⅛" I.P.S. FLEXIBLE GAS AND AIR CONNECTIONS



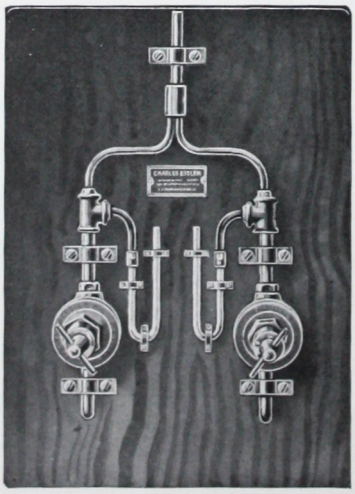
No. 157

¼" I.P.S. FLEXIBLE GAS AND AIR CONNECTIONS



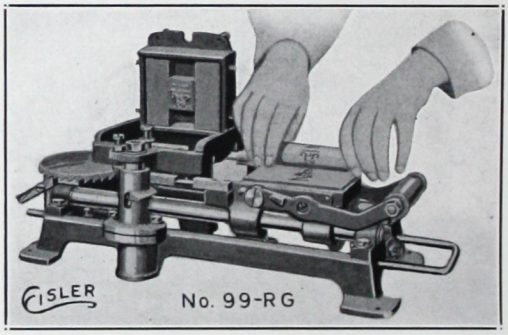
No. 158

REDUCING AND MIXING VALVES FOR RARE GASES



Machine No. 145

SPECIAL HAND OPERATED BARREL PRINTING MACHINE



Machine No. 99-RG

TWEEZERS FOR ALL CLASSES OF WORK

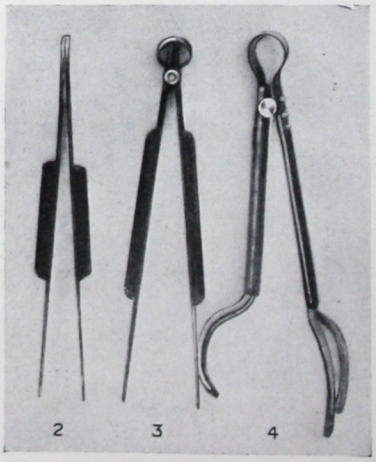
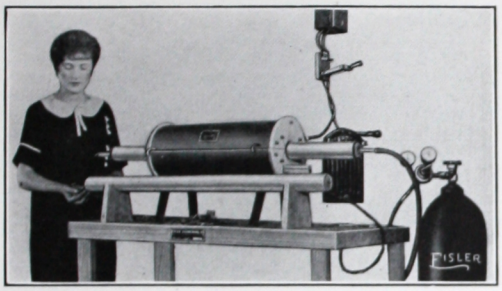


Illustration No. 150

DEGASIFYING APPARATUS

This electric furnace is used for degasifying the metal parts used in the neon tube.

DEGASIFYING FURNACE WITH EXTRA SILICATE TUBE



Machine No. 85-D

Our stock size Electric Heaters are made for 110 and 220 volts. When ordering, kindly mention whether you want the Rheostats for either 110 volts or 220 volts.

Dimensions of our Standard Furnaces: Bore, 2 3/16 inches; Length, 20 inches.

Amperage, 18 on 110 volts.

Amperage, 9 on 220 volts.

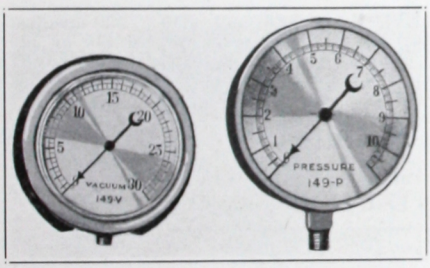
Size of Silicate Tubes, 2 inches by 40 inches. Can be used on any frequency desired.

HINGED TYPE

Machine No. 85-M

VACUUM GAUGE

PRESSURE GAUGE



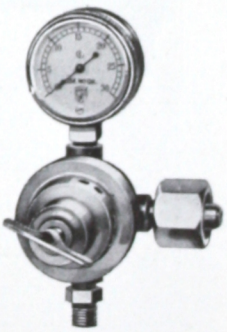
No. 149-V **No. 149-P**

DOUBLE DIAL GAUGE

Machine No. 149

We can readily supply all types of Hydrogen and Nitrogen Pressure Reducing Gauges from stock.

SINGLE DIAL GAUGE

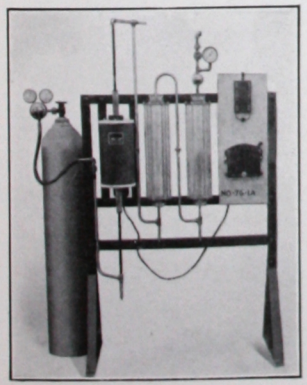


Machine No. 149-A

REDUCING VALVES
For Rare Gases

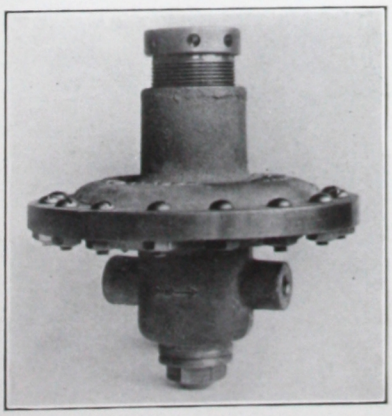
GAS PURIFIERS

Apparatus for Purifying Gas. This is only one of the 15 Types we make.



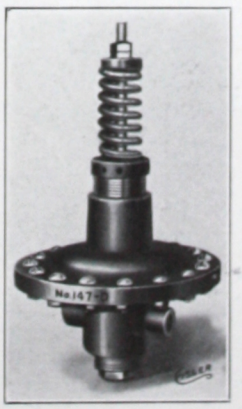
Machine No. 76-1A

PRESSURE REDUCING VALVE



Machine No. 147

VACUUM AND PRESSURE REDUCING VALVE



Machine No. 147-D

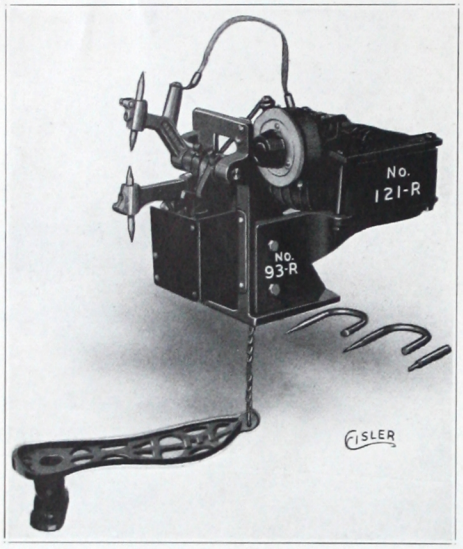
SMALL PRESSURE REDUCING VALVE

Machine No. 147-M

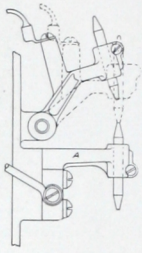
ELECTRIC SPOT WELDING MACHINES

Eisler Electric Spot Welders are extensively employed in the manufacture of Radio Tubes, Incandescent Lamps, Jewelry, Metal Novelties, Sheet Metal Work, Wire Welding, etc. Wire or sheet stock as fine as .0005" to 1/16" may be welded or fused together.

SPOT WELDER
MADE IN TWO SIZES
½ K.W. and 1 K.W.



Machine No. 93-R



A

All the Eisler Electric Spot Welders are equipped with foot-treadles and operate in the following manner: When foot-treadle is pressed the upper electrode as shown by illustration moves down toward the lower fixed electrode, holding the necessary pieces to be welded in proper position. On further pressing of treadle, contact is made, causing the electrical current to flow, centralizing heat at one point and making a fusion between the two substances. Upon releasing treadle, upper jaw electrode returns to original position. This complete welding operation takes but a few seconds.

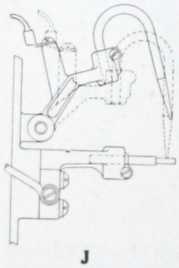
Various styles of jaws are employed, the type used depending on the nature and size of work.

The Eisler Welders are of a well-proven design, noted for their extreme simplicity which is of great value to the life of the Welder. Practically no service is required.

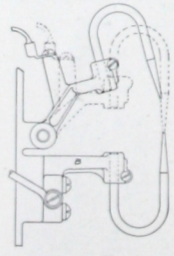
Machines may be equipped with ½ or 1 K. W. Transformers, the selection of which depends on the nature of work. On the standard ½ K. W. Transformer a Rheostat is connected in the primary circuit. Fine adjustments may be made on Rheostat for various welding degrees of heat required between the fixed five low voltage steps of 0.5, 0.1, 1.5, 2.0 and 2.5. On 1 K. W. Transformers no rheostat is required, but can be supplied if desired. The five low voltage steps are .67, 1.34, 2.01, 2.68 and 3.35. All standard transformers are of 60 cycle and for 110 or 220 volt. We also are prepared to supply 20, 40, 50 and all special cycles and larger transformers when required.

A Corner of the Spot Welder Testing Department

All Transformers and Machines are tested, under actual working conditions. Each machine passes a thorough inspection before shipping.

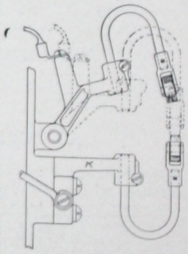


J

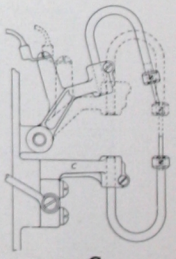


B

EISLER WELDERS ARE UNIVERSALLY USED



K



C

LEADWIRE DEPARTMENT

TWO AND THREE-PIECE LEADWIRE WELDS

The Eisler Leadwire Welding Department is the largest and most complete of its kind, Over Fifty Automatic Welding Machines Are In Use.

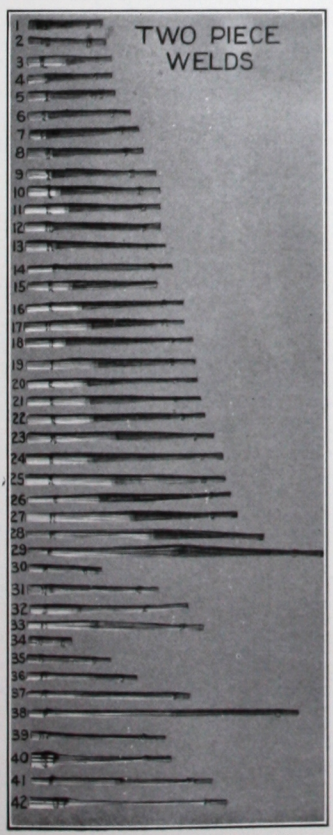
INTERIOR VIEW OF THE HYDROGEN AND OXYGEN TANK ROOM

INTERIOR VIEW OF THE EISLER MODERN WIRE WELDING DEPARTMENT

STANDARD SIZE LEADWIRES STOCKED FOR IMMEDIATE SHIPMENT

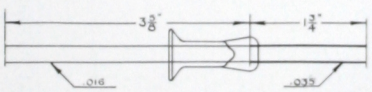
We Are Prepared to Make Every Size Weld to Your Specification

Stock Size Leadwires Are Made in Two and Three-Piece Welds

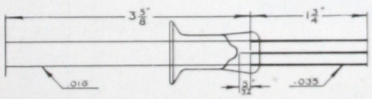


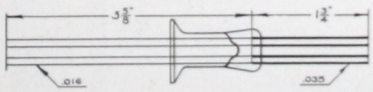
STANDARD STOCK SIZE WELDS

Made Two and Three Piece



Stock Size

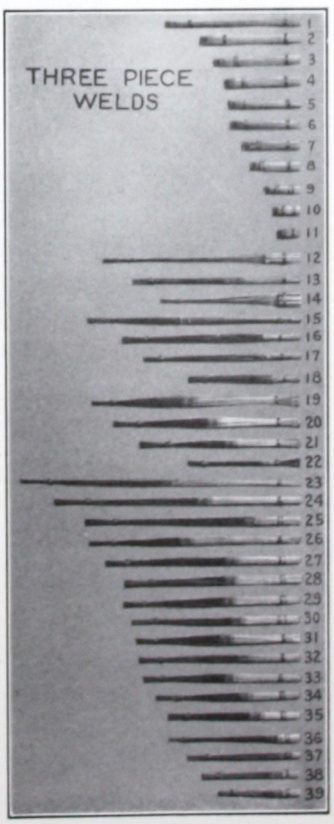




OTHER STANDARD STOCK SIZES

.035 x 1 7/8 x .014 x 3
.035 x 1 7/8 x .014 x 3
.040 x 1 7/8 x .014 x 3

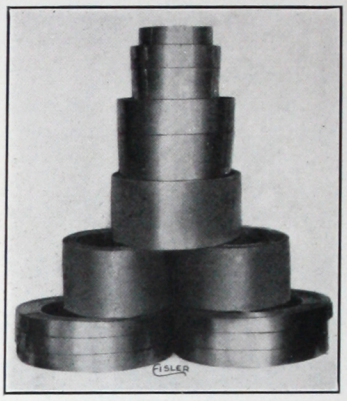
Made Two and Three Piece



COPPER CLAD LEAD-IN-WIRE

From .006 Upward

NICKEL RIBBON FOR ELECTRODES



All Sizes and Widths

NICKEL WIRE FOR MOUNTING

From .005 Upward

COPPER CLAD WEIGHT DATA

Feet Per Pound			
Inches	Feet	Inches	Feet
.008	5,424	.030	385
.010	3,472	.040	217
.012	2,411	.050	138
.014	1,771	.060	120
.016	1,356	.070	110
.018	1,072	.080	95
.020	867.6	.090	80
.025	555.5	.100	35

Nickel Wire Data

Specific resistance 58 ohms per circular mil-foot at 20°C. (68°F.).

Factors to be used in determining resistance at elevated temperatures

Temp. Centigrade	20	100	200	300	400	500	600°
Temp. Fahrenheit	68	212	392	572	752	932	1112°
Resistance in Ohms.....	1.000	1.35	2.00	2.80	3.70	4.10	4.48

No. B. & S.	Diam. in Inches	Ohms Per Ft. at 20°C.	Weight Per 1000 Ft. Bare Wire Pounds	Feet Per Pound Bare Wire
1	.289	.000694	253.0	3.95
2	.258	.000871	201.0	4.98
3	.229	.00110	159.0	6.29
4	.204	.00139	126.0	7.94
5	.182	.00175	100.0	10.0
6	.162	.00221	79.0	12.7
7	.144	.00280	63.0	15.9
8	.1285	.00354	50.0	20.0
9	.114	.00445	39.0	25.6
10	.102	.00557	32.0	31.3
11	.091	.00700	25.0	40.0
12	.081	.00883	20.0	50.0
13	.072	.01118	15.7	63.7
14	.064	.01415	12.4	80.6
15	.057	.01785	9.8	102.0
16	.051	.02228	7.8	128.0
17	.045	.02864	6.2	161.0
18	.040	.0362	4.9	204.0
19	.036	.0447	3.9	256.0
20	.032	.0566	3.1	323.0
21	.0285	.0714	2.5	400.0
22	.0254	.0905	1.9	526.0
23	.0226	.1135	1.5	667.0
24	.0201	.1435	1.2	833.0
25	.0179	.1809	0.97	1,031.0
26	.0159	.2293	0.77	1,299.0
27	.0142	.2876	0.61	1,639.0
28	.0126	.365	0.48	2,083.0
29	.0113	.454	0.38	2,632.0
30	.0100	.579	0.30	3,334.0
31	.0089	.732	0.24	4,167.0
32	.0080	.905	0.19	5,263.0
33	.0071	1.15	0.15	6,667.0
34	.0063	1.45	0.12	8,333.0
35	.0056	1.84	0.095	10,530.0
36	.0050	2.31	0.076	13,160.0
37	.0045	2.87	0.060	16,667.0
38	.0040	3.62	0.047	21,276.0
39	.0035	4.75	0.038	26,316.0
40	.0031	6.44	0.028	35,714.0
	.00275	7.66	0.021	47,600.0
	.0025	9.27	0.017	58,900.0
	.00225	11.45	0.014	71,500.0
	.002	14.49	0.011	91,000.0
	.00175	18.94	0.008	125,000.0
	0015	25.80	0.006	166,666.0

"RUBBER-VAC"

Eisler **"Rubber-Vac,"** is the Finest Pure Gum Rubber Tubing Made for High Vacuum Connections.

As a result of actual tests, service, laboratory experimentation and field research, "Eisler Electric" have designed the New **"Rubber-Vac"** tubing, which is highly recommended for pump connections.

"Rubber-Vac" is acid resisting, non-porous, has an unusually long life, and is not easily affected by heat. Where High Vacuum is required and losses to be avoided, this **"Rubber-Vac"** tubing will serve its purpose to perfection.

This photo represents ONE TON of **"Rubber-Vac"** tubing. Carried in stock for prompt delivery.

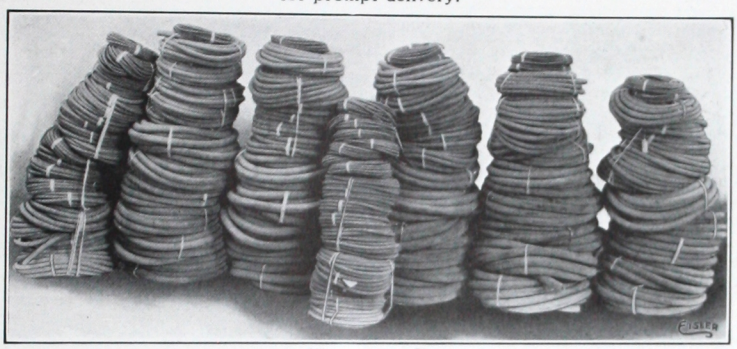


Illustration R

STANDARD SIZES OF "RUBBER-VAC" TUBING CARRIED IN STOCK FOR PROMPT SHIPMENT

Special Requirements for Rubber Tubing Can Be Shipped on Short Notice.

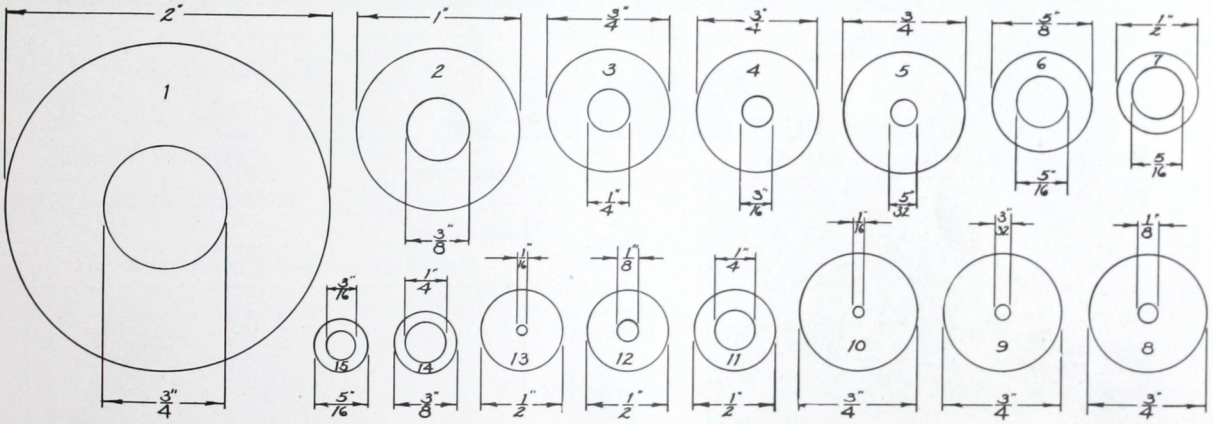
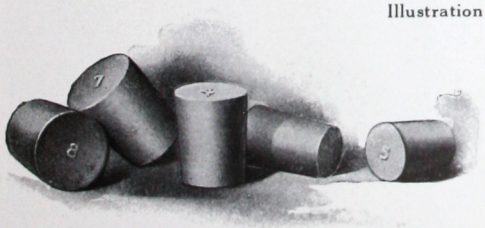
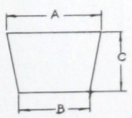


Illustration RT. Order by Number.

Rubber Plugs

All sizes in stock for prompt shipment.





NO	000	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13
A	3/32"	7/64"	1/16"	1/16"	5/64"	5/64"	1"	1 1/16"	1 3/16"	1 5/16"	1 7/16"	1 9/16"	1 11/16"	1 13/16"	1 15/16"	2"
B	1/4"	9/32"	11/64"	3/16"	13/64"	13/64"	15/64"	1/4"	19/64"	1/4"	19/64"	1/4"	19/64"	1/4"	19/64"	1/4"
C	21/32"	7/8"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"	1"

Rubber Parts

1. Tubulating Machine Punch Rubbers.
2. Exhaust Machine Rubbers 3/32" I. D. x 3/4" O. D. x 3 3/4" Length.
3. Sealing and Stem Machine Standard Rubber Drivers.
4. Special Basing Machine Tips.
5. Exhaust Machine Rubbers 1/16" I. D. one End 1/2" deep x 3/16" balance I. D. x 3/4" O. D. x 3 3/4" length.
6. Special Rubber Sleeves for tubulating cracked off Bulbs.

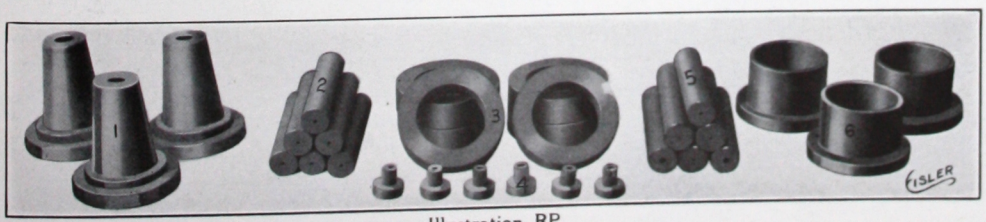


Illustration RP.

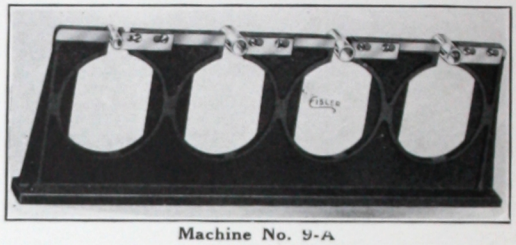
GLASS TUBE SORTING GAUGES

It is very important that the glass tubes are selected for sizes in order to obtain best results.

THIS METHOD OF GAUGING GLASS TUBING IS VERY RAPID

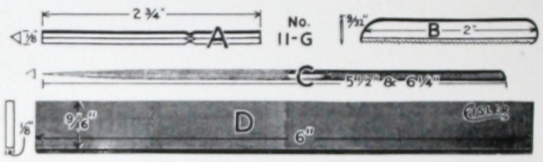
Machine No. 9

ADJUSTABLE GLASS TUBE SORTING GAUGE WITH JAWS OF HARDENED TOOL STEEL



Machine No. 9-A

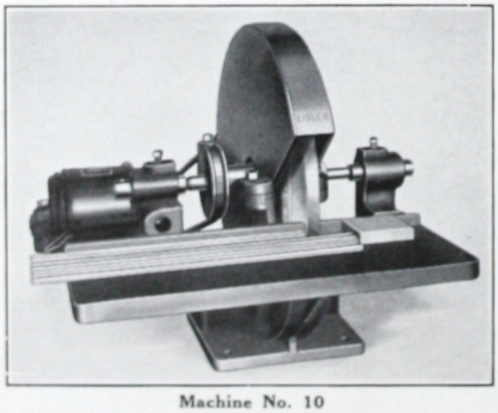
GLASS FILES



A—Three Square Ampoule Cutter
B—Flat Ampoule Cutter
C—Three Square Round Handle File
D—Flat Glass File

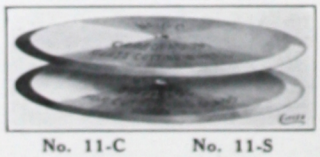
GLASS CUTTING MACHINES AND DEVICES

BENCH TYPE GLASS CUTTING MACHINE



Machine No. 10

GLASS CUTTING WHEELS
Carborundum for General Use
Steel Disc for Hard Glass

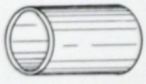


No. 11-C No. 11-S

GLASS CUTTING KNIFE

No. 11-K

FLARE TUBING



EXHAUST TUBING

GLASS CUTTING WHEEL DIAMOND DRESSER

No. 10-D

FLOOR TYPE GLASS CUTTING MACHINE

Machine No. 11

ADJUSTABLE LENGTH HAND TYPE FILE GLASS CUTTER

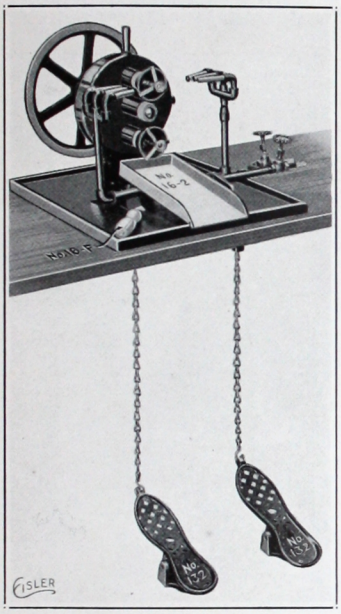
Machine No. 10-H

FLARE MAKING

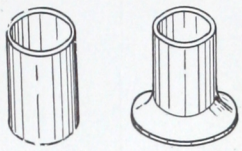
Eisler flare making machines simplify production. No skill is required in making flares. Uniformity is assured.

TWO-HEAD HAND OPERATED FLARE MACHINE

Production 150 Per Hour

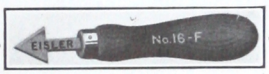


Machine No. 16-2



BEFORE AFTER

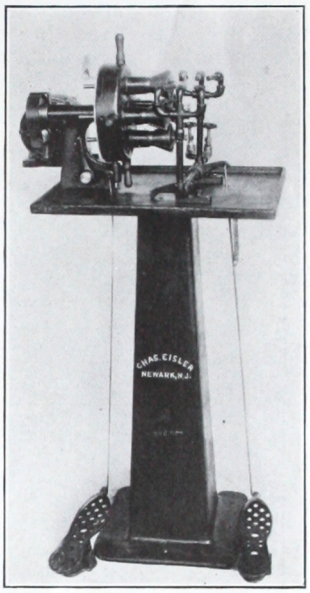
HAND FLARE TOOL



No. 16-F

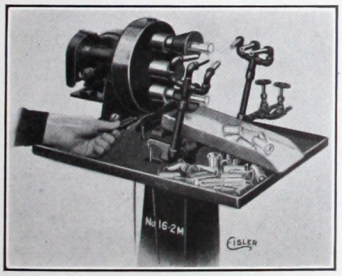
FOUR-HEAD HAND FLARE MACHINE

Production 350 Per Hour



Machine No. 16-M

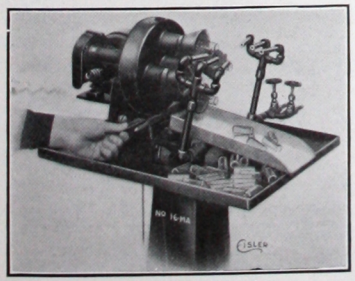
TWO-HEAD HAND FLARE MACHINE—MOTOR DRIVEN



Machine No. 16-2M

FOUR-HEAD HAND OPERATED FLARE MACHINE

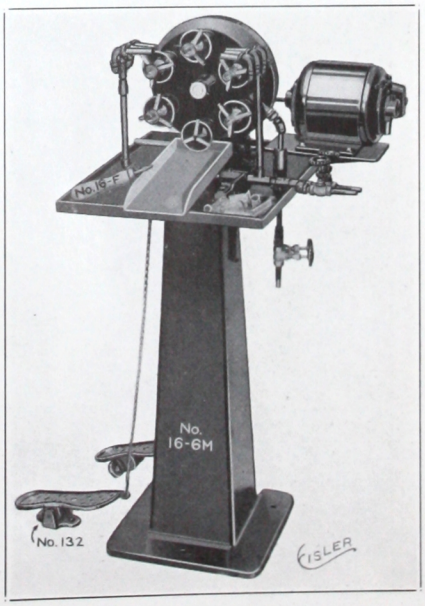
Production 350 Per Hour



Machine No. 16-MA

SIX-HEAD HAND FLARE MACHINE

Production 500 Per Hour



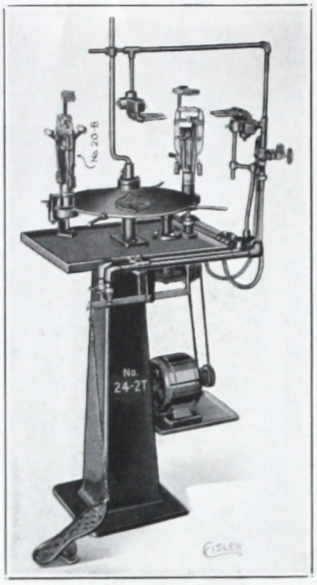
Machine No. 16-6M

STEM MAKING

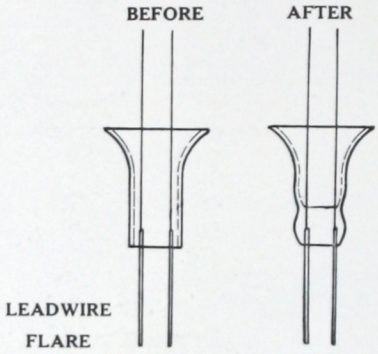
Very little skill is required to make stems on the Eisler stem machine, which greatly simplifies the manufacture of neon tubes. Stem making is the term used for combining the leadwire and glass flare, as shown by the line cuts. These machines can be used for one to ten leadwires, combining any number desired in the flare.
We manufacture over fifteen types of stem machines, selection of machines depends on type of work. The production determines the kind and size of machine to be used.

Made Automatic and Hand Operated

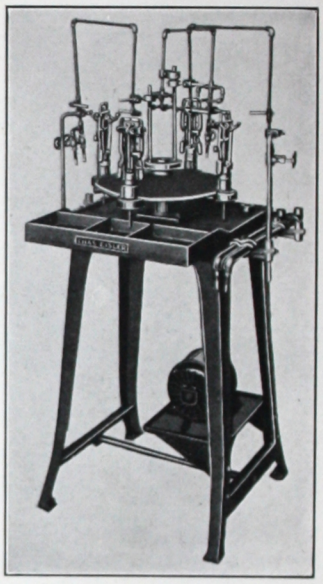
TWO-HEAD LIGHT TYPE STEM MACHINE



Machine No. 24-2T



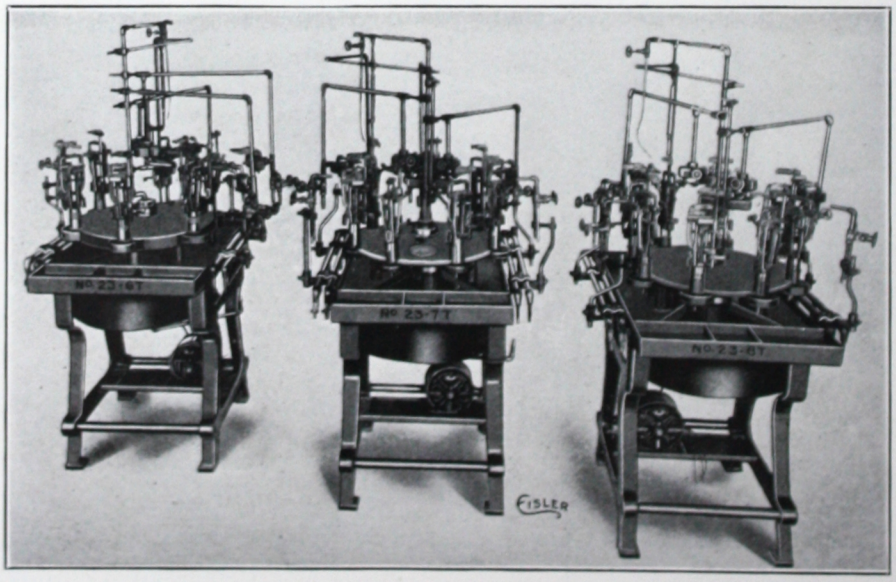
FOUR-HEAD LIGHT TYPE STEM MACHINE



Machine No. 25

AUTOMATIC STEM MACHINES

SIX-HEAD SEVEN-HEAD EIGHT-HEAD



No. 23-6T, 6-Head No. 23-7T, 7-Head No. 23-8T, 8-Head

Manufactured Under Eisler Electric Patent No. 1741016

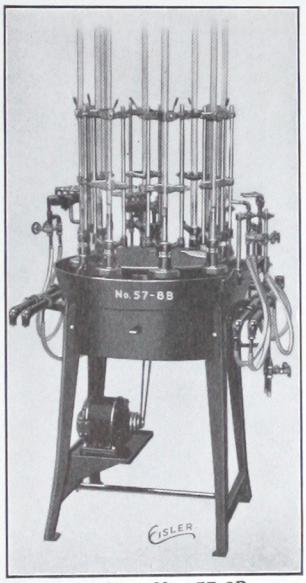
SEALING

The sealing operation is readily performed without any difficulty on the Eisler sealing machine. This machine seals the flare to the glass tubing. Lime, lead or pyrex glass may be used. We manufacture over twelve types of sealing machines, selection depends on production requirements and type of glass used.

EIGHT-HEAD AUTOMATIC SEALING MACHINE

Special for Long Tubes

Production—400 Per Hour

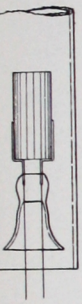


Machine No. 57-8B

SIX-HEAD AUTOMATIC

Production—350 Per Hour

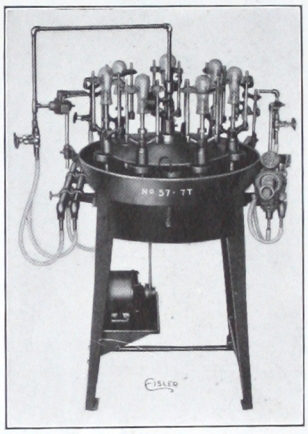
BEFORE



Machine No. 57-BT

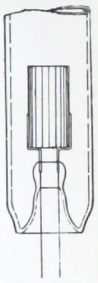
SEVEN-HEAD AUTOMATIC

Production—450 Per Hour



Machine No. 57-7T

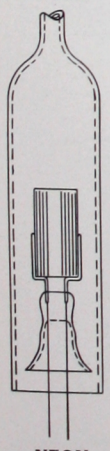
AFTER



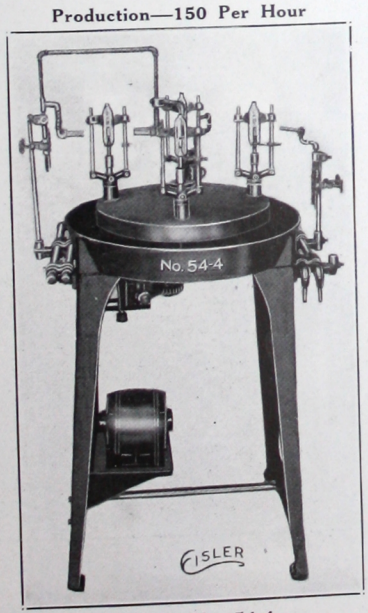
FOUR-HEAD LIGHT TYPE AUTO-INDEXING SEALING MACHINE

Production—150 Per Hour

BEFORE



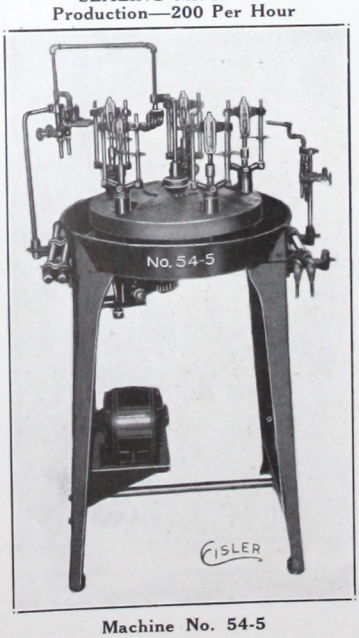
NEON ELECTRODES



Machine No. 54-4

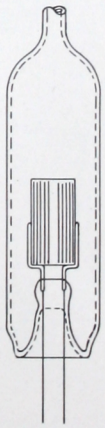
FIVE-HEAD LIGHT TYPE AUTO-INDEXING SEALING MACHINE

Production—200 Per Hour



Machine No. 54-5

AFTER



NEON ELECTRODES

Showing a few of the important operations, to give an idea of the accuracy and care taken in the construction of Eisler Electric "High Vacuum" Pumps.

1—Lapping and testing parts for accuracy.
2—Testing plates for accuracy.
3—Grinding radius of blades.
4—Surface grinding blades.
5—A corner of pump assembly department.
6—McLeod gauge testing and power consumption reading.
7—Another corner of Pump Department.
8—Battery of pumps connected to exhaust machine.
9—Testing Pumps under pressure of 75 pounds.
10—Battery of pumps connected to exhaust machine.

THE "EISLER ELECTRIC" COMPOUND (TWO-STAGE) ROTARY

OIL SEALED

HIGH VACUUM PUMPS

Produce a

VACUUM OF 1 MICRON OF MERCURY OR BETTER

Without the use of preliminary or backing pump

MADE IN FOUR SIZES:

Midget Compound **Standard Compound**

Super-Midget Compound **Super-Standard Compound**

The Compound Pumps are manufactured under the Eisler Patent No. 1672205

Each size obtains same low pressure but differs in free air displacement.

Compound Pumps are also known as Two-Stage Pumps.

Thousands of Eisler "High Vacuum" Pumps are in daily use.

Eisler "High Vacuum" Pumps are extensively used throughout the United States, England, France, Belgium, Austria, Germany, Poland, Switzerland, Holland, Hungary, Canada, China, Japan, Spain and Russia.

Eisler Compound "High Vacuum" Pumps are employed wherever a high degree of vacuum is required—used in the manufacture of radio tubes, incandescent lamps, neon signs, vacuum bottles, etc. Are employed in Hospitals, Universities, Colleges, Physical Laboratories for vacuum distillation, purification of pharmaceutical preparation, electric vacuum furnaces, lecture demonstrations, for backing mercury vapor pumps and for general vacuum use.

The Eisler Compound "High Vacuum" Pump is a self-contained unit, requiring no preliminary or finishing pump. Will produce a vacuum of 1 Micron of mercury or better when connected to vacuum tight system, in which no vapors are given off. In the event of vapors, a freezing arrangement is recommended. In a recent test of average pressures of compound pumps, the tests showed an average pressure of 1 Micron of mercury, McLeod Gauge Reading, and sometimes slightly better. The breaking of the vacuum cannot injure the pump.

The compound pumps are made either for belt or motor drive. When motor is desired, it is mounted on brackets on side of oil tank, the power being transmitted by means of chain and sprocket or belt drive, which is effectively protected by guard.

Eisler Pumps are world famed because of their constant results under unusual working conditions.

The entire pump is immersed in vacuum oil, the level of which is above pump unit. This aids effectively in sealing the pump from the atmosphere and distributes any heat that may be generated by friction, preventing displacement of parts through expansion. The pump unit is secure in the tank by means of four large screws.

The pump is of all steel construction, all parts of which are ground and lapped; it is very important that no corrosive liquids or vapors be permitted to enter pump. Mercury vapors or mercury will not harm pump, as no babbit is employed; but if an excessive amount of mercury should get into the pump, it will interfere with evacuation and must be removed. The sliding steel blades are hardened and ground, allowing a tolerance of one-half of a thousandth's perfect fit. The finest quality of material and best workmanship that human skill can produce are built into Eisler "High Vacuum" Pumps.

All Eisler Pumps are finished with our special glossy olive green enamel.

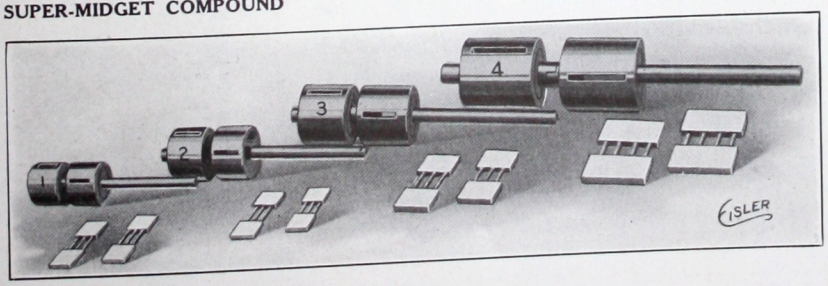
Useful Information, Care and Operation of "High Vacuum" Pumps given on Page 36

Four Sizes of Compound Pistons

All Steel Construction

MIDGET COMPOUND
SUPER-MIDGET COMPOUND

STANDARD COMPOUND
SUPER-STANDARD COMPOUND



OUR SLOGAN: "HIGH VACUUM" PUMPS OF SUPERIOR DESIGN AND QUALITY

DETAILED DESCRIPTION OF COMPOUND PISTON OPERATION

As shown by the phantom view, Fig. 1, the Eisler Midget, Super Midget, Standard and Super Standard Compound "High Vacuum" Pumps consist of a two-stage pump and operate in the following manner:

The diagram, Fig. 2, shown, will aid in the explanation of the workings of compound pumps. The diagramatic view shows the piston cylinders A and B alongside of each other, whereas in reality B, instead of being to the right of A, is actually in front. This is shown in Phantom View, Fig. 1. The pistons rotate in the direction of the arrows and have a common shaft shown in Fig. 1. The pistons are connected by means of a slotted extension and are mounted eccentric to the chamber. At 1, necessary connections are made to the object or vessel to be exhausted. The rotating piston 2 and 2' have sliding blades 8 and 8' which are pressed against the walls of the chamber by means of springs.

Since the rotation is in the direction of the arrows, the volume of 3 and 3' increases, while the volume of 4 and 4' decreases. Therefore, it is readily seen that the air will be evacuated from the opening at 1. We will, for explanatory purposes, deal with cylinder A. We see the volume 3 increases, while the volume 4 decreases, therefore, the air is driven into the adjoining chamber through outlet 5.

Cylinder B pump evacuates air at 6, driving it out through the valve 7 and ball valve 11, into oil at 9. At 10, the spring tension of valve 7 is readily adjusted by means of double lock nuts. No adjustments need be made on same, as pump leaves factory properly set.

Phantom View Showing Details of Construction of Compound (Two-Stage) Pump

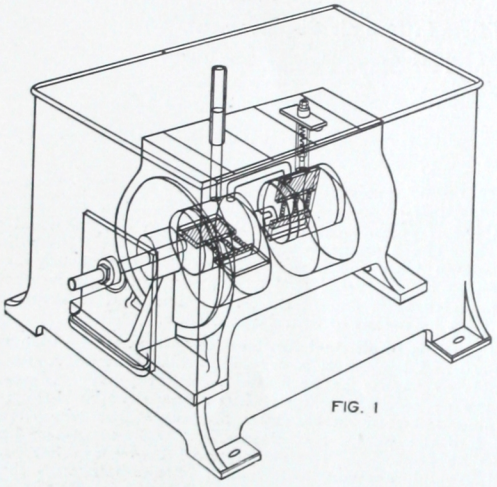


FIG. 1

Diagram Cross-Section of Compound (Two-Stage) Pump

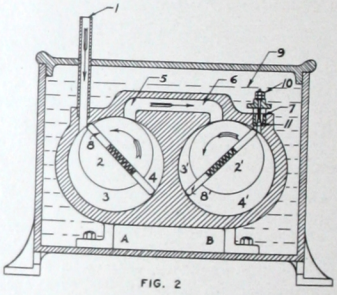


FIG. 2

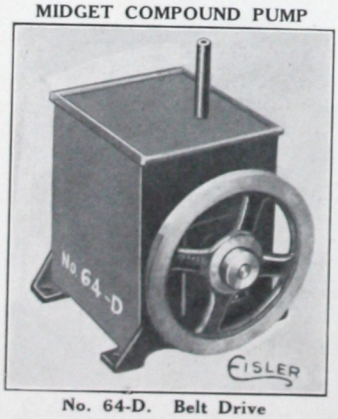
Midget Compound (Two-Stage) "High Vacuum" Pump

Vacuum 1 Micron of Mercury

Capacity 1.4 Cu. Ft. of Free Air Per Minute

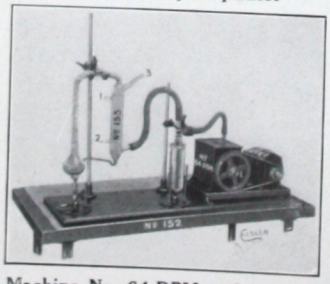
The Midget Compound (Two-Stage) "High Vacuum" Pumps No. 64-D or 64-DBM are recommended for use in Technical and Scientific Laboratories and Hospitals. Also used extensively for backing of mercury vapor pumps. For lecture demonstration, this pump should prove invaluable since it combines speed with reliability.

MIDGET COMPOUND PUMP



No. 64-D. Belt Drive

MIDGET COMPOUND PUMP With Mercury Aspirator



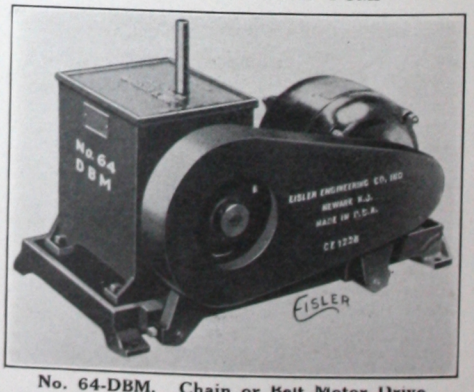
Machine No. 64-DBM and No. 153

64-D—Pump Only

B—Base

M—Motor

MIDGET COMPOUND PUMP



No. 64-DBM. Chain or Belt Motor Drive

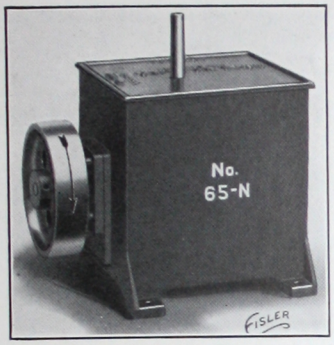
ALL EISLER "HIGH VACUUM" PUMPS ARE OIL SEALED

Super-Midget Compound (Two-Stage) "High Vacuum" Pump

Vacuum 1 Micron of Mercury — Capacity 2.3 Cu. Ft. of Free Air Per Minute

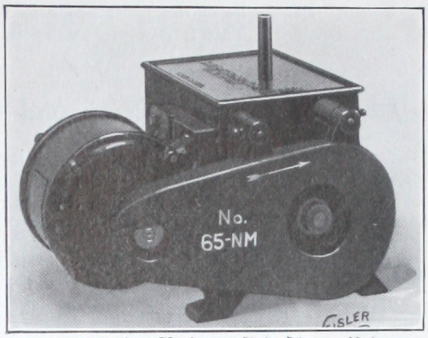
The Super-Midget Compound (Two-Stage) Pumps No. 65-N or 65-NM are employed in Technical and Scientific Laboratories. They are favored because of their greater speed in attaining final vacuum. Also used for general vacuum work and those purposes already mentioned.

SUPER-MIDGET COMPOUND PUMP



No. 65-N. Belt Drive

SUPER-MIDGET COMPOUND PUMP

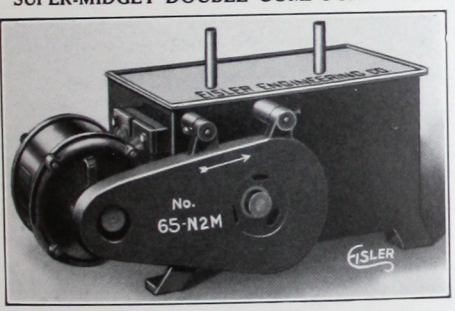


No. 65-NM. Chain or Belt Motor Drive

Super-Midget Double Compound (Two-Stage) "High Vacuum" Pumps

Vacuum 1 Micron of Mercury
Individual Capacity 2.3 Cu. Ft. Free Air Per Minute

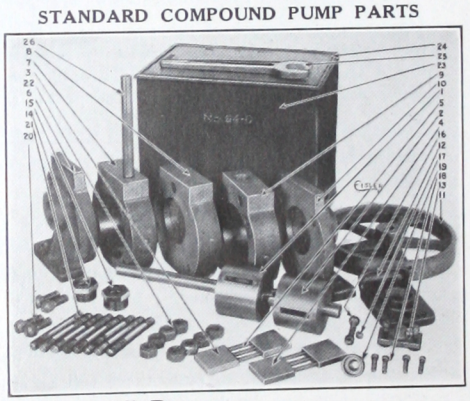
SUPER-MIDGET DOUBLE COMPOUND PUMP



No. 65-N2M. Chain or Belt Motor Drive

The Super-Midget Double (Two-Stage) "High Vacuum" Pump No. 65-N2M is employed on automatic exhausting apparatus and for other general vacuum purposes, including some of those previously mentioned. The advantage through its use is a saving of floor space, vacuum oil and power consumption.

STANDARD COMPOUND PUMP PARTS

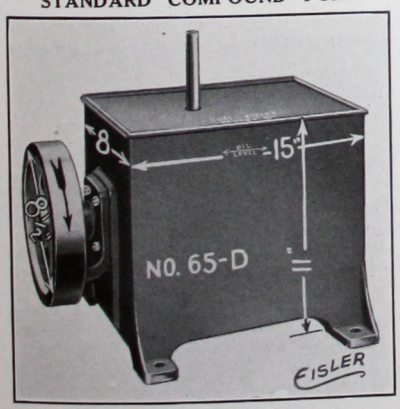


Standard Compound (Two-Stage) "High Vacuum" Pump

Vacuum 1 Micron of Mercury — Capacity 3.5 Cu. Ft. of Free Air Per Minute

The Standard Compound (Two-Stage) "High Vacuum" Pumps No. 65-D or 65-DM are used in evacuating large vessels, radio tubes, neon sign tubes, incandescent lamps, for vacuum distillation and to furnish vacuum for general use. Also employed to do necessary preliminary and backing to Single-Stage pumps.

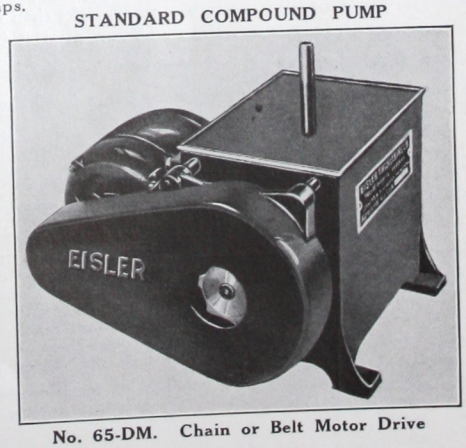
STANDARD COMPOUND PUMP



No. 65-D. Belt Drive

Skill and Accuracy are Required in Pump Assembly

STANDARD COMPOUND PUMP



No. 65-DM. Chain or Belt Motor Drive

ALL EISLER "HIGH VACUUM" PUMPS ARE OIL SEALED

Useful Information, Care and Operation of "High Vacuum" Pumps

We recommend the use of "Gargoyle Vacuum Pump Oil," manufactured by the Vacuum Oil Company, New York, U. S. A., and obtained in all principal cities of the world. This oil is specially "dried out" for high vacuum pump operations.

All Eisler "High Vacuum" Pumps leave the plant properly tested and have been run for approximately three to four days under actual working conditions. This is done to assure the user of its proper functioning.

Procedure of Setting a Compound (Two-Stage) Pump Into Operation

Remove cover, and make sure tank is entirely clean and then fill with vacuum oil until the pump unit is entirely submerged. Take a pint of vacuum oil and pour into the opening of the exhaust pipe. Turn pump over by hand. During this operation, one feels a great resistance as though the blades of pump were seizing. This resistance is simply due to the excess oil contained in pump which cannot but slowly escape through the valve.

The exertion is continued until oil is entirely expelled—then pump will turn over freely. Connect "Rubber Vac" Tubing to inlet opening and pump is ready for "High Vacuum" duty. In all compound pumps, exhaust is expelled into oil.

Care of "High Vacuum" Pumps

It often occurs, particularly in the chemical industry, that a pump is unknowingly used as a condenser. This occurs if care is not taken into condensing the volatile vapors prior to entering pump. When this takes place, the pressure or mm reading of pump cannot be lower than that of the vapor pressure of the products that have been condensed in the pump.

However, in some cases the condensed products may solidify and harm the metal construction of pump. This, however, is very easily remedied if a sufficiently large trap is placed between the pump and the vessel to be exhausted, keeping as low a temperature as possible. Through the use of ice, carbonic snow, or liquid air, the volatile products will be readily condensed in the trap. This method proves to be very satisfactory, as the oil is kept clean and the pump is not harmed.

In no instance must the pump itself be chilled by any external means. This would cause it to act as a condenser.

Eisler "High Vacuum" Pumps will require no adjustment and if properly cleaned and filled with clean oil, will give the vacuum specified.

If the proper reading is not obtained, it is due either to a leak somewhere in the line or to the presence of condensed substance in oil (such as water, mercury, essence, etc.), there are no other possible causes.

It is quite simple to ascertain whether a pump and vacuum line are in good working order. If compound (two-stage) pump, lift lid and note surface of oil around valve; if single-stage pump, note oil in glass trap.

When pump is exhausting air, a heavy froth of bubbles will appear gradually; as the vacuum increases, lighter bubbles will appear and finally, after complete evacuation has taken place, the surface of the oil will remain calm.

If, after a period of working, there will be still found a heavy froth of bubbles, there is a leak somewhere in line or in vessel. This can be located by cutting-off at different points in exhaust line.

We recommend the use of "Rubber Vac" Pure Gum Rubber Tubing, specially designed for "High Vacuum" Pump connections in pieces as short as is possible. On connecting "Rubber Vac" Tubing to glass or metal piping a small quantity of Castor Oil should be inserted into the rubber tubing. This Castor Oil will aid in giving a perfect seal.

It is also recommended not to use other cocks than those specially designed for vacuum apparatus and made either of glass or metal and properly lubricated. When metal tubing is used, ascertain that it is not porous as this sometimes occurs.

When using glass tubing, burn edges to prevent damaging of rubber ends and allowing particles of rubber getting into pump.

The normal working temperature of pump is 45 degrees C.

Changing Oil

The only care that need be taken with Eisler "High Vacuum" Pumps is once oil is loaded with impurities, that it be changed.

To empty out the oil, have pump make a few revolutions with inlet exhausting tubing open to atmosphere. Next remove emptying plug and when oil is out, clean inside of tank with rags only. Put plug in position and pour about a pint of oil through inlet opening of Compound Pump; at the same time turning pump by hand power. For single-stage pump pour oil into exhaust outlet, at the same time turn pump in reverse direction; oil then will be emitted from inlet pipe. The oil so introduced will follow the normal tract of air and gas and draw out dirt, etc. That oil being emptied, repeat operation until oil emitted is clean. Then fill pump as already specified.

In no instance should pump be dismantled. If pump need such attention, return same to us and our experts will make necessary repairs and replacements of parts.

The cleaning of pump as just explained should always be sufficient. The wearing out of pump is not possible as working parts are constantly moving on a film of oil and have no real contact with one another.

COMPARISON OF COMMON UNITS

MM	MICRONS
760	760000
1	1000
.001	1
.00075	.75
.0005	.5
.00025	.25
.0001	.1
.00005	.05

ALL METAL MERCURY ASPIRATOR

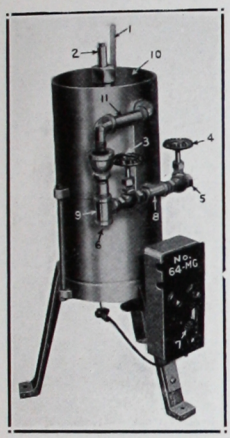
ELECTRICALLY HEATED—MADE IN UNITS OF ONE AND SIX

Since the introduction of this all metal mercury Aspirator we have had repeated assurance from users that this six unit mercury vapor pump is well-suited for use on final positions of the Automatic Exhaust Machine and that the single unit is recommended for Exhaust Position.

These mercury aspirators when properly backed, are absolutely guaranteed to perform satisfactorily. The entire pump is made of steel, all joints of which are welded. The unit is entirely water cooled. Each individual pump is equipped with electrical heating units, constructed to operate on 27 volts only, with a consumption of 375 watts (per each unit). Therefore, a suitable transformer is provided operating from 110 or 220 volt supply, having a secondary outlet of 27 volts and of sufficient wattage.

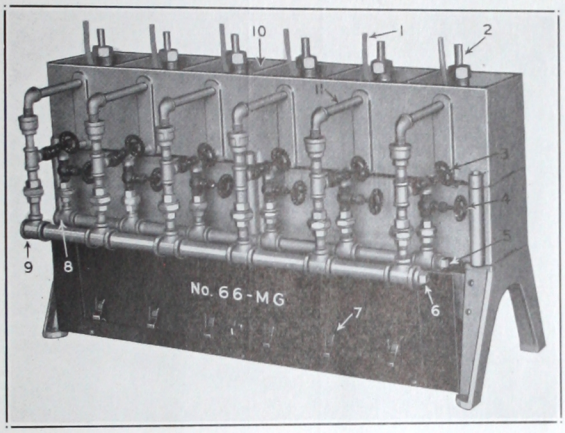
Every unit is thoroughly tested before shipment, and no part of it is susceptible to corrosion by contact with traces of mercury vapors.

SINGLE UNIT



Machine No. 64-MG

UNIT OF SIX

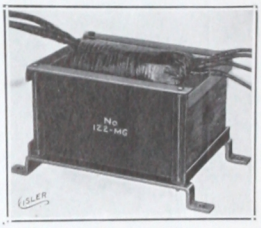


Machine No. 66-MG

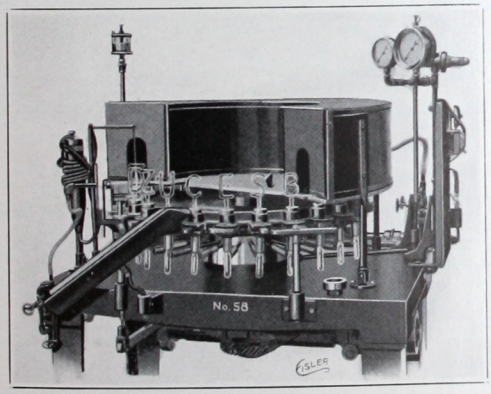
TRANSFORMER FOR SINGLE UNIT

No. 121-MG

TRANSFORMER FOR UNIT OF SIX



No. 122-MG

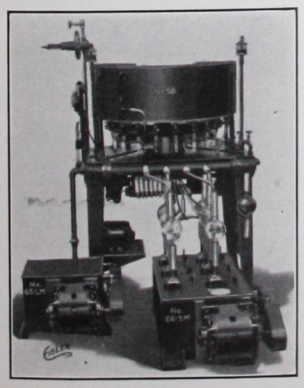


Rear View

AUTOMATIC EXHAUST MACHINE
ARRANGED FOR AUTOMATIC GAS FILLING

This 24-Head Automatic Exhaust Machine automatically exhaust letters to high degree of vacuum, bombards internally and automatically gas fills ready to be tipped-off.

Machine No. 58

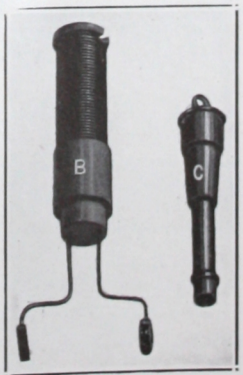


Machine No. 58

MERCURY PUMP BOILER

No. 64-MGA

MERCURY PUMP HEATER UNIT AND NOZZLE



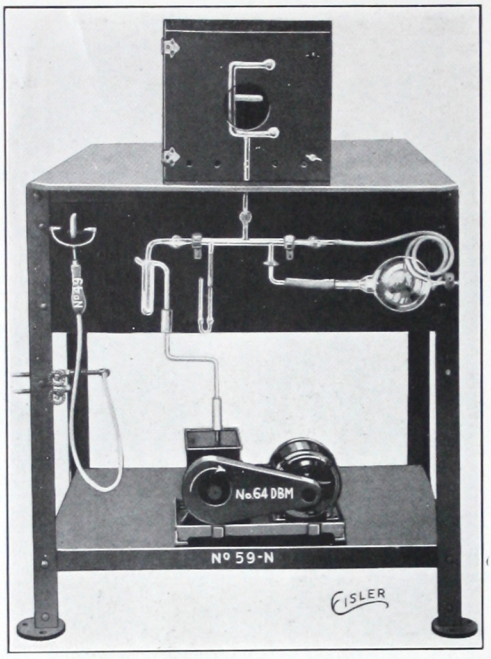
No. 64-MGB No. 64-MGC

NEON EXHAUST POSITIONS

Complete With Necessary Equipment

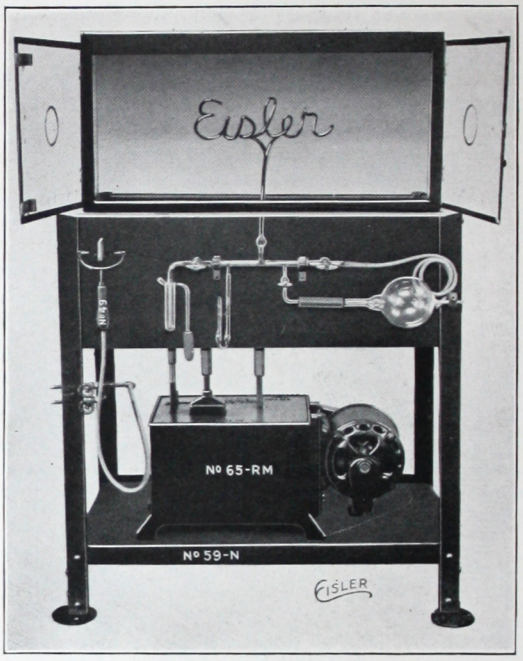
FURNISHED WITHOUT OVENS IF SO ORDERED

With "High Vacuum" Pump No. 64-DBM



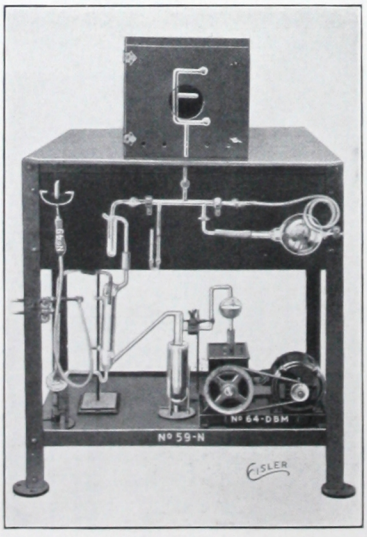
Machine No. 59-N Arrangement 4

With "High Vacuum" Pump No. 65-RM



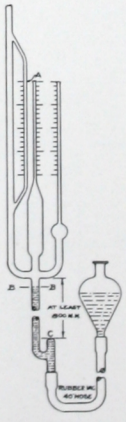
Machine No. 59-N Arrangement 1

With Mercury Pump No. 155 and Midget "High Vacuum" Pump No. 64-DBM



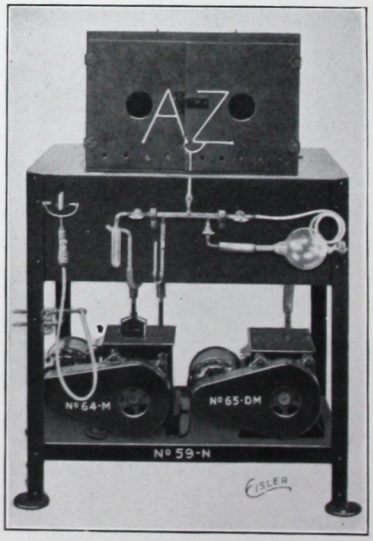
Machine No. 59-N Arrangement 2

GAS AND PRESSURE GAUGE



No. 59-NG

With "High Vacuum" Pumps No. 64-M and No. 65-DM



Machine No. 59-N Arrangement 3

WHEN ORDERING SPECIFY OVEN DIMENSIONS DESIRED

LOW FREQUENCY INTERNAL BOMBARDERS FOR NEON TUBES

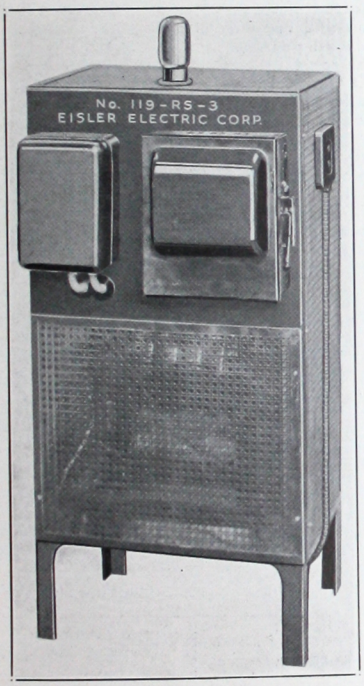
The removal of harmful gases from the inside of Neon Luminous Sign Tubing is most important. These harmful gases originate from two sources—the wall of the glass tubing and from the metal electrodes.

Proper heat treatment to glass and electrode while pumping is effective in removing these impurities. This method is known as Internal Bombarding, and the following apparatus is employed:

INSTANTANEOUS FULL LOAD LOW FREQUENCY BOMBARDER

Attached to each end of glass tubing at electrode is high tension wire leading from apparatus. Current is thrown on at switch box. Pressing button, full load of 10,000 volts is passed through tubing which is under partial vacuum. By continually pressing and releasing button automatically, the tubing and electrode are heated.

Made 3, 5, 7 and 10 K. W.

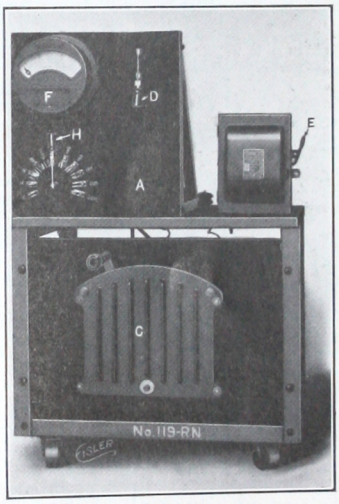


Machine No. 119-RS-3

VARIABLE STEP INTERNAL BOMBARDER

To each end of Neon Luminous Tubing, a high tension wire is connected to electrode. The current is turned on at switch box "E" and by stepping up switch "H," as shown in illustration, a gradual increase of heat is caused to glass and electrodes. Rheostat "C" functions between fixed voltage step at "H." "D," when thrown on, gives wattage reading on meter "F."

Made 3, 5, 7 and 10 K. W.



Machine No. 119-RN-5

Full Operating Details Furnished with Each Machine

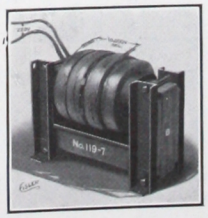
Auto Transformer for regulating primary and secondary voltage with ten variable steps.

Made in 3, 5, 7 and 10 K. W. 10,000 secondary 110 or 220 volt primary.

Machine No. 119-NV

Unit Transformer used in conjunction with Machine No. 119-NV.

Made in 3, 5, 7 and 10 K. W. 10,000 secondary, 110 or 220 volt primary.



Machine No. 119-T

EXTERNAL TYPE BOMBARDER

The use of this External Type Bombarder requires the use of coil which is placed around the glass electrode and only heats the metal electrode to a glowing color red removing all gases. Therefore for glass treatment, a heated oven is employed to drive out impurities.

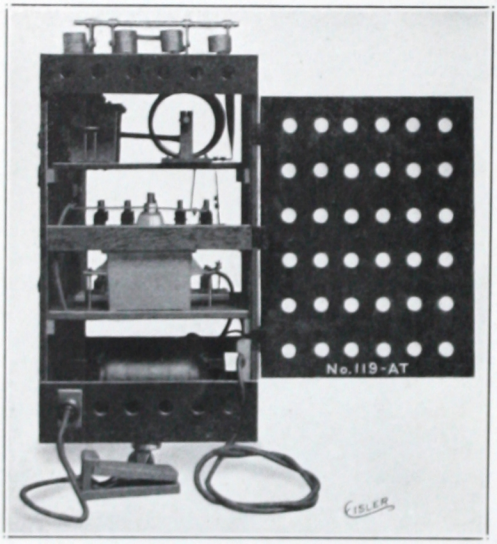
New Type Tungsten Gap Bombarder

Made in Three Sizes, 1.5, 2.5 and 5 K.W.

A powerful driving circuit is used to which is coupled a simple tuned circuit, resulting in a current step-up and a voltage step-down. The power transformer and tank condensers have been chosen to allow a generous safety factor. The current in the driving, or gap, circuit ranges from fourteen amperes on the small machines to thirty-five amperes on the large machines. The spark gap set used in this new machine has been especially designed to eliminate the constant care and servicing. Twenty large, variable tungsten gaps are used. The tungsten contacts are designed to carry a fifty-ampere current. They are mounted in large solid brass radiating blocks which, in turn, are securely mounted on carefully tested alberene stone platforms. The mounting blocks are equipped with large copper plate radiators. The heat is dissipated so rapidly that there is no possibility of trouble from this source. The tungsten points are only separated about eight thousandths of an inch. The individual gaps are made adjustable by means of a micrometer screw and a lock-nut. The only maintenance necessary is a checking of the gap spacing from time to time and retightening. This requires only a few minutes and can be accomplished by the operator. A ventilating fan is supplied as an added precaution.

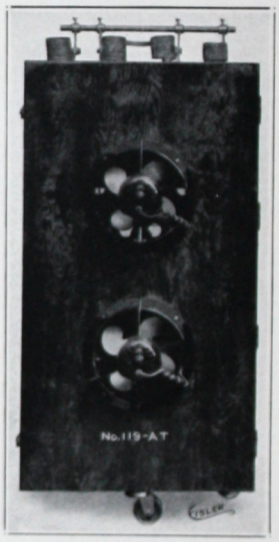
Especially constructed high-frequency cable is used to connect the heating coils. The coils are chromium plated to prevent oxidation and corrosion. All connecting buses, contacts, and binding posts, are constructed of extra heavy brass and copper to eliminate all possible losses. The constants of the circuit have been chosen to effect the most efficient power transfer. The operating parts are well ventilated without being exposed. The cabinet is mounted on four large, heavy-duty, steel ball-bearing swivel roller casters.

FRONT VIEW



Machine No. 119-AT

REAR VIEW



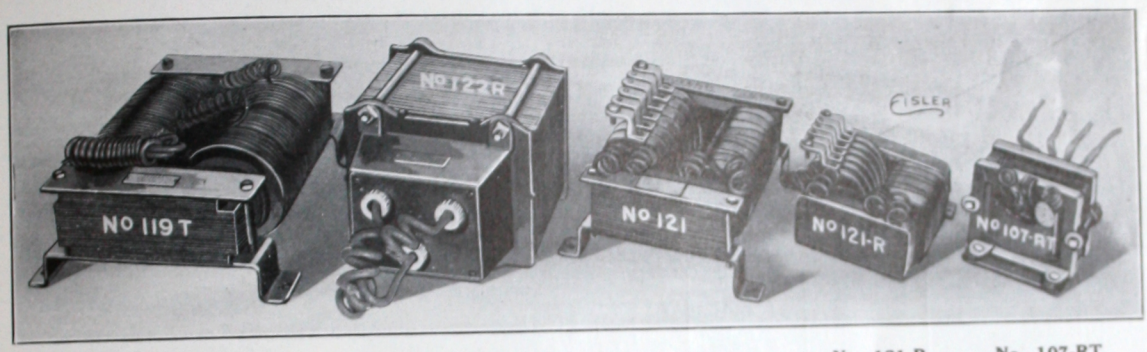
Machine No. 119-AT

No.	TRANSFORMER RATING 220 V. Primary, 60 Cycles		Operating Load Current Amp.	Output Ampere Turns at 300 K.C.
	Secondary	KVA		
119 AT 1 A	8,300	1.5	16	800
" 2 A	8,300 "	1.5 "	16 "	1200 "
" 2 C	10,000 "	2.5 "	20 "	1200 "
" 3 A	12,000	5.0	25	2800
" 4 A	12,000	5.0	25	3500

TRANSFORMERS

Showing a Few of the Many Types of Transformers We Manufacture

We are prepared to make any transformer to your drawings and specifications.
These transformers illustrated are carried in stock for immediate delivery.



No. 119-T
Transformer used in our Bombarder

No. 122-R
110 and 220 volt Transformer Balancing Coil

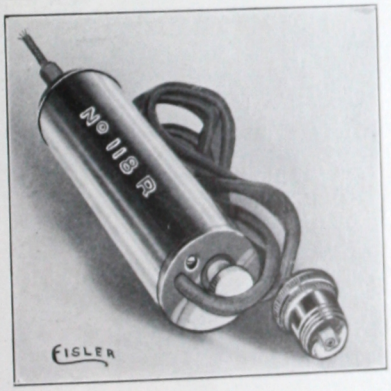
No. 121
Transformer used on our Spot Welder No. 93. 1 KVA

No. 121-R
Transformer used on our Spot Welders ½ K. W.

No. 107-RT
Small low voltage Step-down Transformer

FOR TESTING VACUUM

This 17,000-Volt High Frequency Secondary Voltage Coil is used for testing vacuum. For use only with 110-Volt A.C. or D.C. The use of this coil test is the best known method for production work. As the vacuum pressure increases and the spark coil is touched lightly to glass, a blue color is formed in vessel or tube being exhausted. As degree of vacuum increases, the color fades into lighter shades of blue finally disappearing completely. Then, tube has been evacuated to highest degree of vacuum attainable.

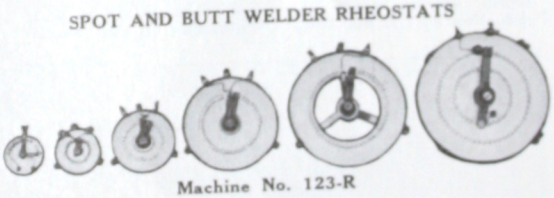


Machine No. 118-R

RHEOSTATS IN STOCK FOR ELECTRIC FURNACES

Machine No. 123

SPOT AND BUTT WELDER RHEOSTATS

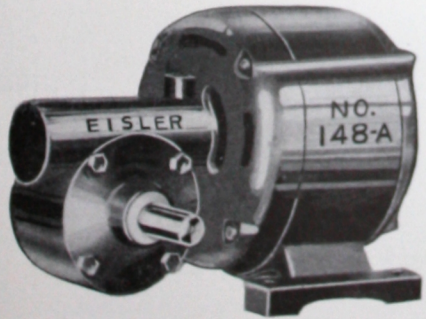


Machine No. 123-R

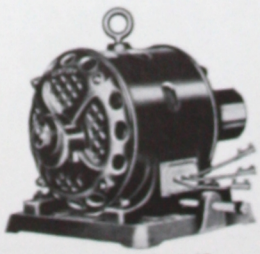
MOTORS

We always carry a stock of standard size motors and can assure prompt deliveries. These motors are efficient in their operation and are guaranteed to be the highest grade and best adaptable for individual drive. For export we carry in stock 25-50 cycles, 110 and 240 volt.

REDUCTION GEAR DRIVE AS PART OF MOTOR



Machine No. 148-A



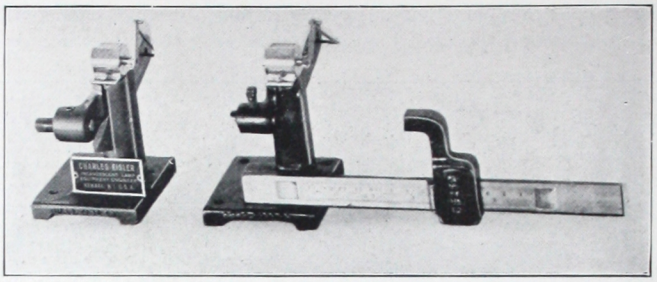
Machine No. 148

ACCESSORIES

WIRE CUTTER—FOOT OPERATED

Without Scale with Counter

Machine No. 4



With Scale, Stop and Counter

Machine No. 4-S

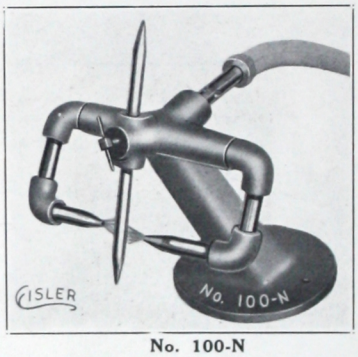
SPECIAL MINIATURE BULB HOLDER

No. 150-5

SPECIAL STEM HOLDER

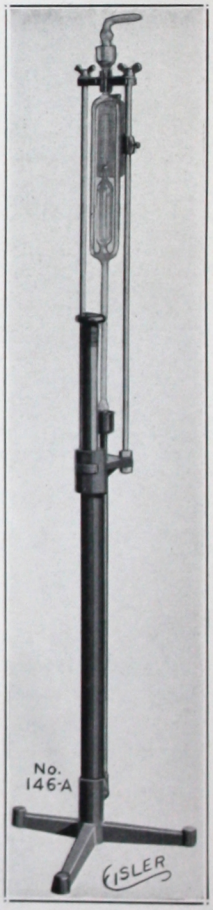
No. 150-6

NEW TYPE GAS HEATED SOLDERING IRON



No. 100-N

McLEOD VACUUM TESTING GAUGE

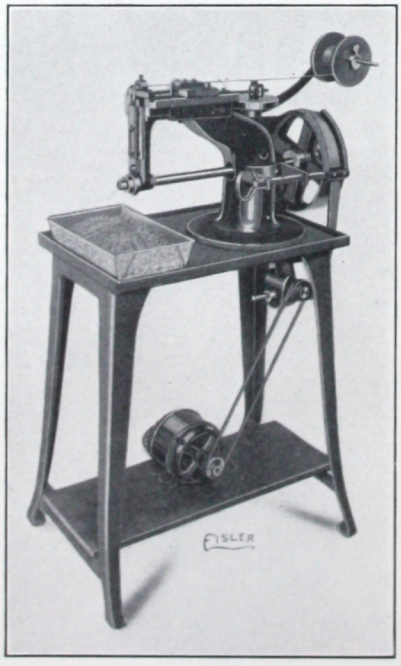


Machine No. 146-A

WIRE CUTTING MACHINE

LIGHT TYPE WIRE CUTTING MACHINE

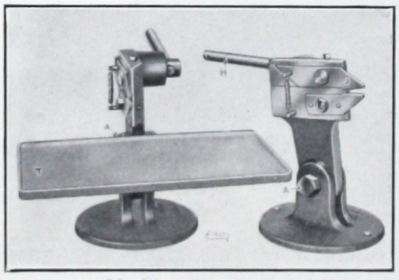
Cutting Lengths ¼" to 2½" Wire Sizes .005 to .040
Production 75-125 Per Minute, Depending on the Length



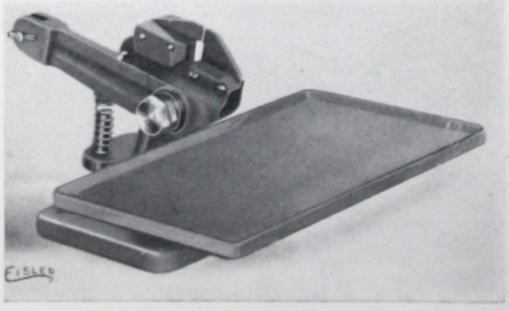
Machine No. 111-L

ADJUSTABLE CLAMPER

Foot or Hand Operated



Machine No. 39-R
SINGLE JAW TYPE CLAMPER, FOOT OPERATED

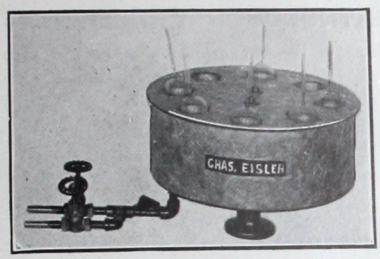


Machine No. 45

PREHEATER

Machine No. 63-S

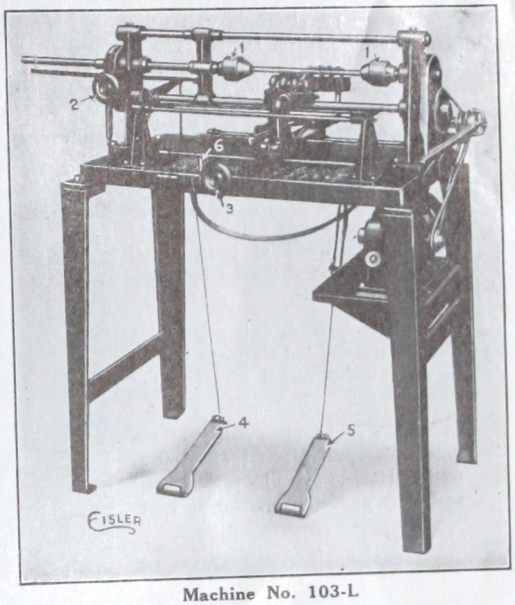
REPAIR PREHEATER
Hand Operated



Machine No. 63

BULB BLOWING MACHINE

For manufacturing bulbs below two inches outside diameter, which can be readily blown out of glass tubing



Machine No. 103-L

STOPCOCK GREASE

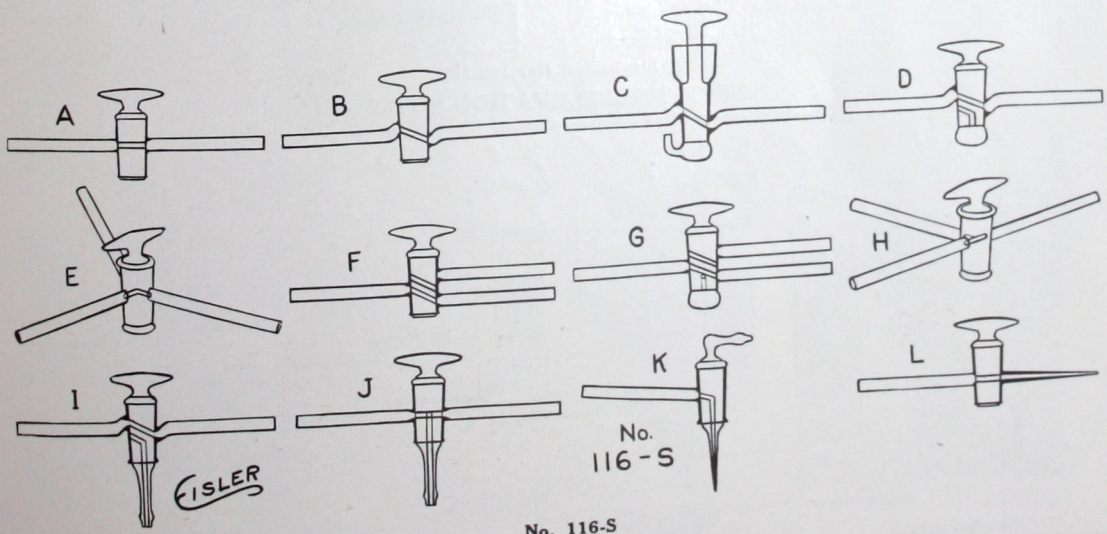
No. 166-G

MERCURY ASPIRATOR
PYREX GLASS

No. 155-P

SOFT AND PYREX GLASS STOPCOCKS

Made Straight Side Tubes and Capillary. All MM Sizes Carried in Stock.



No. 116-S

NEON TUBE GLASS ELECTRODE UNITS

Corning Lead Glass Used

ALL ELECTRODES ARE THOROUGHLY DEGASIFIED

A—A complete electrode unit using copper electrode No. 166-N, Type A, shown on this page, with two rows of beads.

B—A complete electrode unit using copper electrode No. 166-N, Type E, shown on this page, with one row of beads as insulators.

C—A complete electrode unit using copper electrode No. 166-N, Type G, shown on this page. The electrode is welded to three heavy nickel wires on the stem.

D—A complete electrode unit using copper electrode, clamped to the stem by three heavy nickel wires.

E—A complete electrode unit using mica disc and electrode of pure nickel mesh, welded to the stem by three heavy nickel wires.

F—A complete electrode unit using mica disc and pure nickel electrode welded to three heavy nickel wires on the stem.

G—A complete double glass wall electrode unit with special metal alloy electrode. Held in place by special bead and glass wall. Non-infringing type.

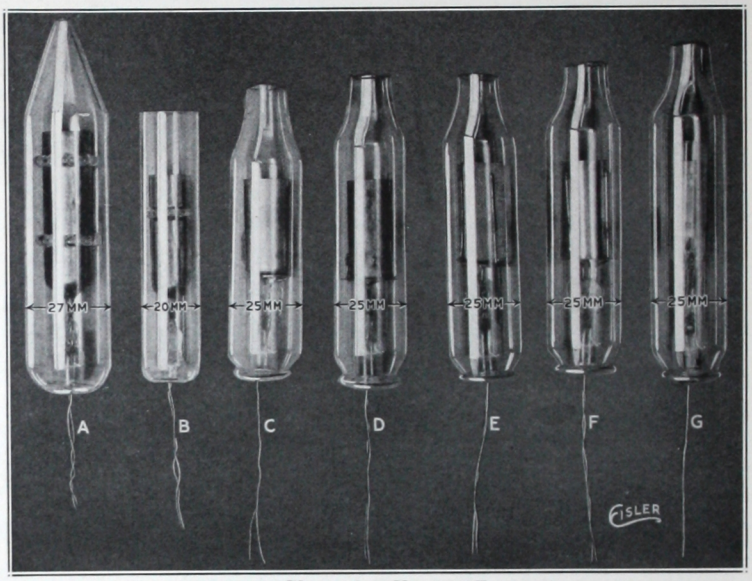


Illustration No. 166-E

COPPER ELECTRODES—STANDARD STOCK SIZES

"G" and "H" Are Also Made Four Prong

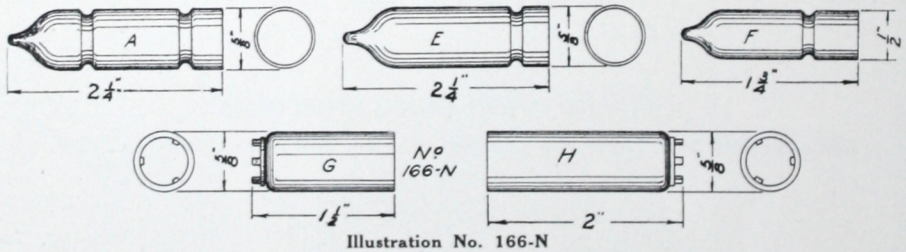
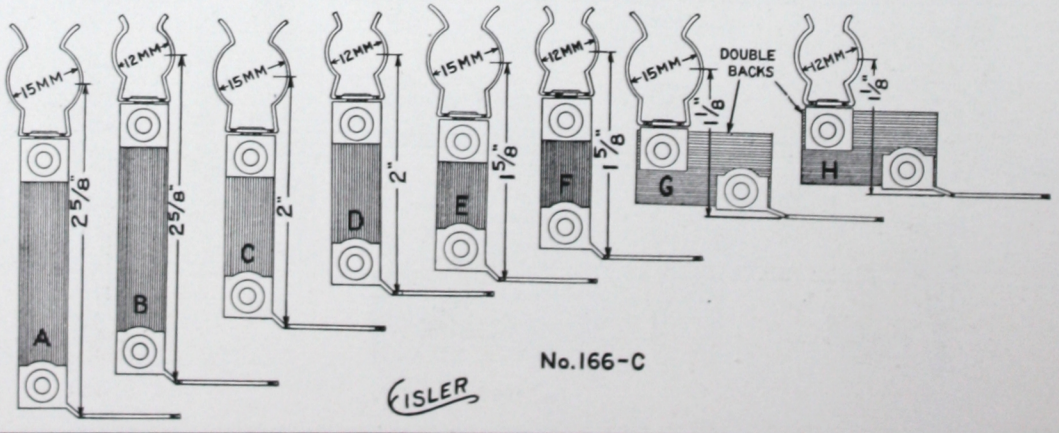


Illustration No. 166-N

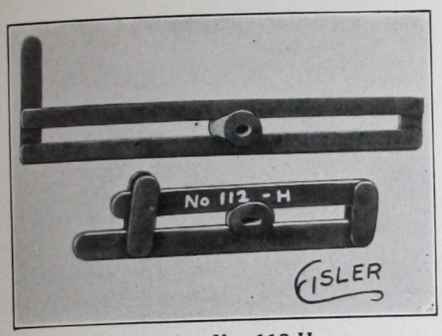
NEON TUBE ELEVATION POSTS

Standard Stock Sizes Shown—Special Sizes Made To Order



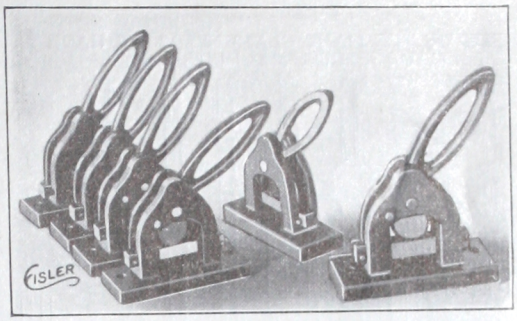
No. 166-C

HAND PINCH COCKS



Machine No. 112-H

MOUNTABLE TYPE PINCH COCK



Machine No. 112

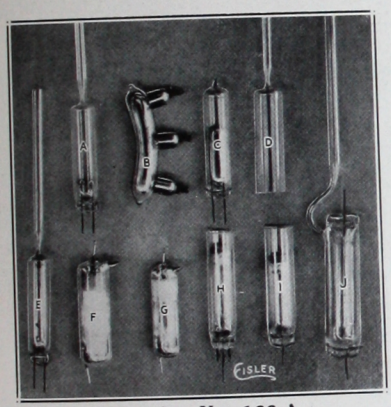


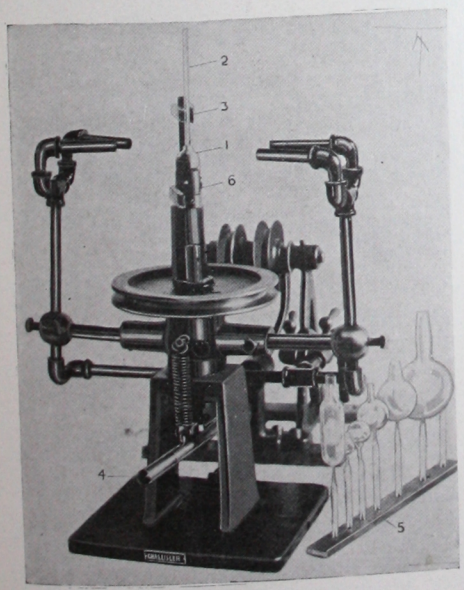
Illustration No. 166-A

GLASS MERCURY SWITCHES

Eisler Electric have designed and built many special machines for the production and manufacture of mercury switches used for electrical contacts. Machines listed below are a few of the types employed in this work.

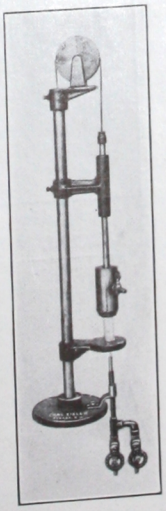
If you have any problems along these lines, submit them for production method suggestions.

SINGLE-HANDLE TYPE BUTT SEALING MACHINE



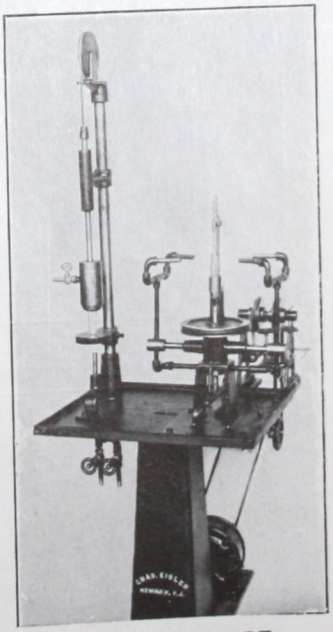
Machine No. 102

PIERCING ATTACHMENT



Machine No. 48-A

SPECIAL BUTT SEALING AND TUBULATING MACHINE

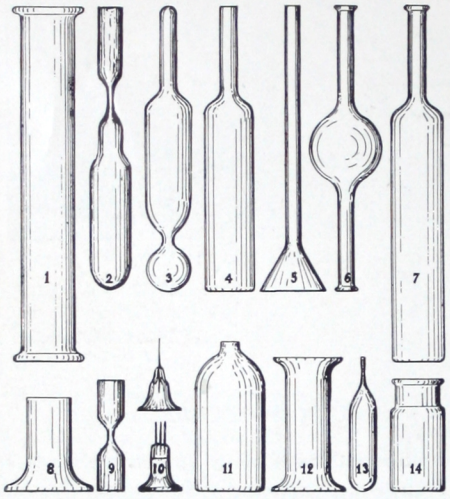


Machine No. 102-DT

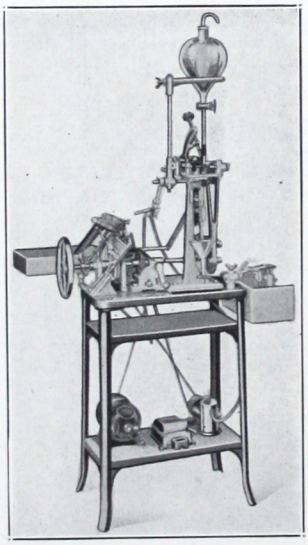
SPECIAL MACHINES

We are Specialists in the manufacture of special machines needed in glass working. Consult Eisler Electric when in need.

A FEW OF THE MANY GLASS NEEDS WE HAVE MADE SPECIAL MACHINES FOR



Automatic Ampule Filling and Sealing Machine

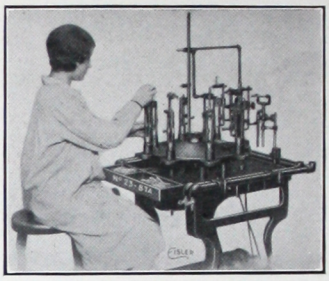


Machine No. 161

TUBE END SEALING MACHINE

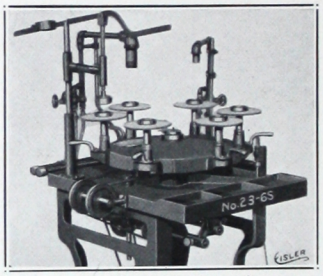
Machine No. 57-8S

AMPULE CONSTRICTION MACHINE
Glass Shape 2



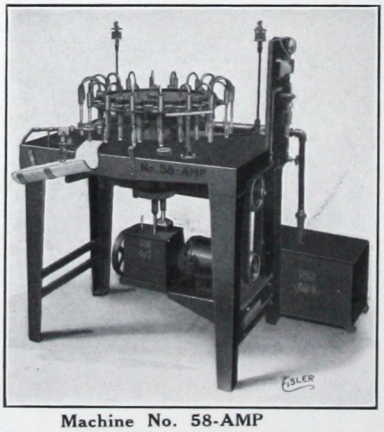
Machine No. 23-8TA

WATCH CRYSTAL SHAPING MACHINE



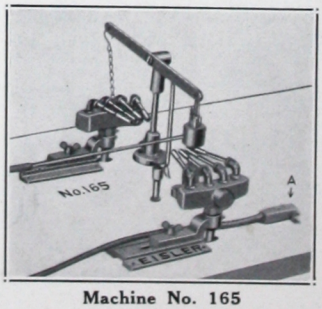
Machine No. 23-6S

AMPULE EXHAUST MACHINE
Glass Shape 2



Machine No. 58-AMP

SPECIAL MOULDING MACHINE



Machine No. 165

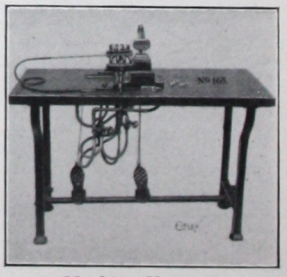
FLANGING MACHINE
Glass Shape 1

Machine No. 25-H

TUBULATING MACHINE

Machine No. 51

HYDROMETER MOULDING MACHINE
Glass shape 2 and 3



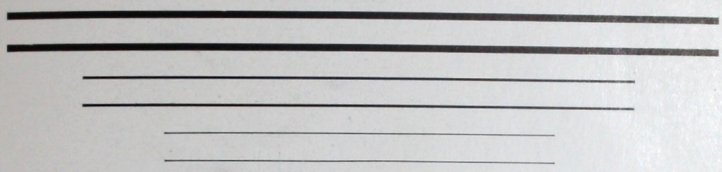
Machine No. 165

TUNGSTEN RODS AND WIRE—LEADWIRES

All Sizes Stocked for Immediate Shipment

When using pyrex glass, tungsten alloy leadwires are required. Eisler Electric tungsten alloys is made under the supervision of a thorough staff of metallurgists and as a result is best obtainable.

GROUND TUNGSTEN RODS

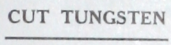


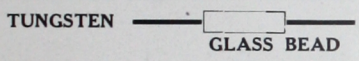
TUNGSTEN ALLOY FILAMENT

In All Sizes

TUNGSTEN LEADWIRE

CUT TUNGSTEN





TUNGSTEN CUT TO ANY LENGTH DESIRED

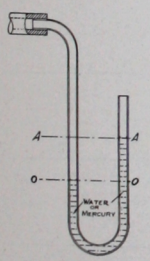
Also Supplied in Sheets, Ribbon and Special Alloys

ALL SIZES LEADWIRES MADE TO SPECIFICATIONS

Glass Beads Furnished on Tungsten Alloy Wire to Suit Requirements

OTHER WIRE DATA ON PAGE 26

USEFUL INFORMATION



PRESSURE MEASURING GAUGE

For determining gas pressure, water is used.

For determining air pressure, mercury is used.

GAS PRESSURE recommended for all Eisler Electric type of equipment from 10″ to 13″ of water column. For Gas Boosters and Regulators see pages 20 and 21.

AIR PRESSURE recommended for all Eisler Electric type of equipment is 2 to 3 lbs. pressure per sq. inch. For Air Pressure Blowers and Regulators see pages 20 and 21.

AIR PRESSURE, 27.7 inches of water column equals 1 lb. per square inch.

AIR PRESSURE, 2.041 inches mercury column equal to 1 lb. per square inch.

GAS AND AIR PRESSURE, most important is the proper ratio or pressure of Gas and Air. The success of production depends on this equipment. For Regulators, Boosters and Air Pressure Blowers see pages 20 and 21.

MERCURY COLUMN, 30″ equals 14.7 lbs.

VACUUM OIL, for Eisler High Vacuum Pumps, Gravity 29½, Flash 410, Fire Test 470, Cold Test 35, Viscosity @ 100-180.

DEGASIFYING leadwires, electrodes, coils, plates, hooks and all elements used whenever possible should always be degasified. See page 25 for Electric Degasifying Apparatus.

GLASS BULBS, our machines as arranged will work satisfactory with lead or line glass.

PYREX GLASS, sealing or any other operations accomplished by using gas under pressure with oxygen. Also requires special burners designed for this work. See page 12.

EXHAUSTING MACHINE, oven heat, 425 to 450° "C" is recommended.

ARGON and NITROGEN gas filling and mixing for a given ratio of gas. Use apparatus No. 145. Page 22.

ARGON or NITROGEN gas filling, for exact predetermined pressure use our Vacuum and Pressure Regulating Valve No. 147-D. Page 23.

MEMORANDUM